

DEPARTMENT OF HAWAIIAN HOME LANDS  
**MOLOKA'I ISLAND PLAN**



THE DEPARTMENT OF  
HAWAIIAN HOME LANDS



STATE OF HAWAII

**GROUP 70**  
INTERNATIONAL

June 2005



# Moloka'i Island Plan

June 2005

Department of Hawaiian Home Lands



State of Hawai'i







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## Executive Summary





## EXECUTIVE SUMMARY

### TABLE OF CONTENTS

ES.1	Department of Hawaiian Home Lands Planning Guidance .....	ES-1
ES.2	Moloka'i Island Plan and General Plan Policies .....	ES-1
ES.3	Land Use Plan.....	ES-2
ES.3.1	‘Ualapu‘e Land Use Plan .....	ES-5
ES.3.2	Kapa‘akea, Kamiloloa, Makakupa‘ia Land Use Plan .....	ES-7
ES.3.3	Kalama‘ula Land Use Plan .....	ES-9
ES.3.4	Kalaupapa-Pālā‘au (Apana 3) Land Use Plan .....	ES-11
ES.3.5	Ho‘olehua- Pālā‘au (Apana 1 & 2) Land Use Plan.....	ES-13
ES.4	Priorities for Residential Development.....	ES-14
ES.4.1	Residential Priority 1: ‘Ualapu‘e.....	ES-14
ES.4.2	Residential Priority 2: Kapa‘akea, Kamiloloa, Makakupa‘ia .....	ES-16

### LIST OF FIGURES

Figure ES.1	DHHL Planning System.....	ES-2
Figure ES.2	DHHL Landholdings on Moloka‘i .....	ES-3
Figure ES.3	‘Ualapu‘e Preferred Land Use Plan.....	ES-6
Figure ES.4	Kapa‘akea, Makakupa‘ia, Kamiloloa Preferred Land Use Plan .....	ES-8
Figure ES.5	Kalama‘ula Preferred Land Use Plan.....	ES-10
Figure ES.6	Kalaupapa-Pālā‘au Land Use Plan .....	ES-12
Figure ES.7	Ho‘olehua-Pālā‘au Preferred Land Use Plan .....	ES-15

### LIST OF TABLES

Table ES.1	DHHL Land Use Designations .....	ES-4
Table ES.2	Acreage Summary by Land Designation Under the MIP .....	ES-4







## EXECUTIVE SUMMARY

### ES.1 DEPARTMENT OF HAWAIIAN HOME LANDS PLANNING GUIDANCE

The Hawaiian Homelands Program was started in 1921 with the passage of the Hawaiian Homes Commission Act which was enacted by the U.S. Congress as a homesteading program to place native Hawaiians, defined as “any descendant of not less than one-half part of the blood of the races inhabiting the Hawaiian Islands previous to 1778”, on designated lands. As the responsible authority to implement the Act, the mission of the Department of Hawaiian Home Lands (DHHL) is to manage its landholdings held in trust effectively and to develop and deliver these lands to native Hawaiians. To accomplish this, DHHL uses a tiered Planning System that begins with the DHHL General Plan (GP) for developing long-term strategies to determine responsible uses of these lands (*Figure ES.1*).

The second tier of the DHHL Planning System includes the development of Island Plans, which are regional 20-year visioning documents that designate areas for residential, agricultural, pastoral homestead as well as conservation, special district, community use, and income generating uses.

### ES.2 MOLOKAI ISLAND PLAN AND GENERAL PLAN POLICIES

The Moloka'i Island Plan (MIP) provides recommendations for the future use of the 25,899 acres and indicates specific areas for priority homestead development. With respect to the island of Moloka'i, the primary objectives of the GP that guided the development of the MIP included the following:

- Designate all DHHL lands with one of the land use categories under the General Plan;
- Deliver at least 400 Residential homesteads, or an average of 20 new lots per year;
- Provide space for and designate a mixture of appropriate land uses, economic opportunities and community services in a native Hawaiian-friendly environment;
- Ensure existing homestead neighborhoods are maintained as healthy and attractive communities for future generations;
- Provide agriculture and pastoral homestead lots for subsistence and supplemental purposes;
- Provide general lease agriculture and pastoral lots of adequate size for commercial farming or ranching business purposes by native Hawaiians.
- Identify and establish a clear understanding of existing water resources available to the Hawaiian Home Trust;
- Preserve and protect significant natural, historic and community resources on Trust lands;
- Manage interim land dispositions in a manner that is environmentally sound and does not jeopardize their future uses;
- Allow native Hawaiian use of natural resources on Trust lands for traditional and cultural purposes;
- Use no more than 1% or 266 acres on Moloka'i of DHHL lands for Commercial and Industrial uses by 2014; and
- Establish and implement a planning system that increases beneficiary participation in the development and use of Hawaiian home lands and improves communications between DHHL and the beneficiary community.





Figure ES.1 - DHHL Planning System

### ES.3 LAND USE PLAN

The planning process for the MIP was initiated in August 2004 and was developed over a 10-month period that included input from DHHL staff, commissioners, and beneficiaries. The planning process began with a review of previously conducted studies, reports, and analyses and included a survey of beneficiaries to gather information about their lease and, location preferences, and desired community facilities. This information was synthesized and analyzed through the creation of a Geographic Information System (GIS) that was used to formulate a baseline understanding of environmental, socio-economic, and cultural features of the land parcels and the potential range of alternative scenarios. These alternatives were presented at a series of community meetings held throughout the island and were refined based on input gathered during these meetings, whereupon preferred land use alternatives were formulated. Based upon evaluating criteria that included order of magnitude costs and an assessment of community needs, priority areas for development were identified.

DHHL lands on Moloka'i are situated in five major areas that include 'Ualapu'e, Kapa'akea, Makakupa'ia, Kamiloloa, Kalama'ula, Kalaupapa, Pālā'au, and Ho'olehua and comprise a total of 25,899 acres (Figure ES.2). A synopsis of the major land use designations for these lands (Table ES.1 and ES.2) as provided in the MIP are discussed below.

**Residential Homesteads** - The plan proposes 417 new residential homesteads at a total cost of \$44.8 million. The priority Residential uses will be focused in 'Ualapu'e, Kapa'akea, Makakupa'ia, and Kamiloloa. Residential areas on DHHL lands on Moloka'i consists of 742 acres.





*Agriculture Homesteads* – The plan calls for the completion of the previously awarded 58 Nā'iwa Agricultural lots in Ho'olehua and proposes to allow the subdivision of specific lands in Ho'olehua that could potentially yield 544 agriculture homesteads at a cost of \$25.8 million (M). However, the limiting factor for this development is securing an adequate provision of a potable water source to support the projected demand of 1.53 mgd. Approximately 2,350 acres have been designated for Subsistence Agriculture while an additional 5,862 acres have been classified as Supplemental Agriculture.

*Pastoral Homesteads* – The existing pastoral uses on approximately 1,927 acres will be maintained.

*General Agriculture* – Over 8,498 acres of land island-wide are designated General Agriculture. This designation preserves the land for a possible future use and makes it available for groups or individuals to lease it for farming and ranching. Beneficiaries interested in large scale agriculture or ranching are encouraged to lease general agriculture areas. General agriculture areas are located in 'Ualapu'e, Kapa'akea, Makakupa'ia, Kamiloloa, Kalama'ula, and Ho'olehua.

*Special District* – The 5,558 acres designated Special District includes environmentally or culturally sensitive lands in 'Ualapu'e, Kapa'akea, Makakupa'ia, Kamiloloa, Kalama'ula, Kalaupapa, and Ho'olehua. Lands in this category should be protected but also made available for certain community and commercial uses.

*Community Use* – A total of 234 acres are designated Community Use and includes areas in residential communities such as school and parks sites as well as community use areas with regional significance. Activities related to Community Based Economic Development are also in this category. Community uses are found in all DHHL tracts on the island.

*Conservation* – 655 acres of environmentally sensitive areas in Kalaupapa and Ho'olehua are designated as Conservation lands and are consistent with the boundary demarcations set by the State Land Use Commission.

*Commercial* – 58 acres of land are designated in Kalama'ula and Ho'olehua as Commercial for income generation purposes for DHHL.

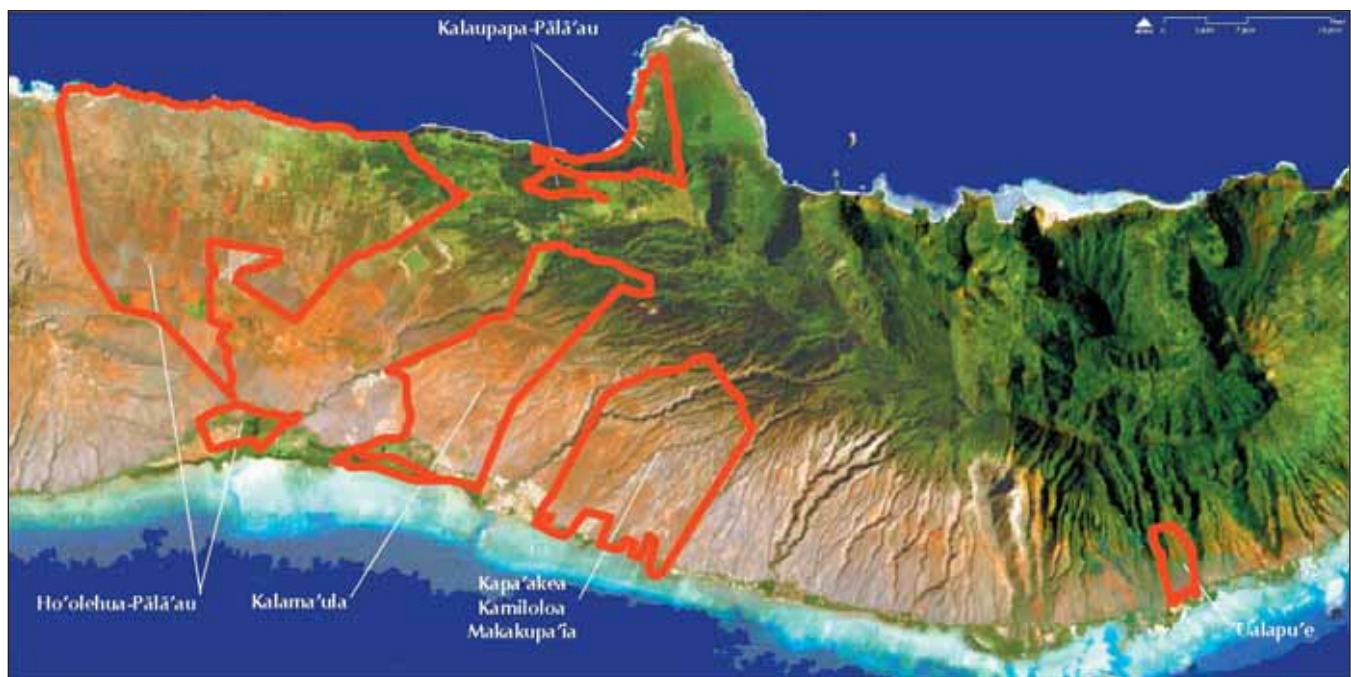


Figure ES.2 - DHHL Landholdings on Moloka'i





SETTING/INTENT PURPOSE		LOT SIZE	MINIMUM INFRASTRUCTURE
<b>Residential (Homestead)</b>	Residential subdivisions built to County standards in areas close to existing infrastructure	≤ 1 acre	County Standards
<b>Subsistence Agriculture (Homestead)</b>	Small lot agriculture. Lifestyle areas intended to allow for home consumption of agricultural products. Occupancy optional.	≤ 5 acres	Water (catchment or potable or surface) Road access
<b>Supplemental Agricultural (Homestead)</b>	Large lot agriculture. Intended to provide opportunities for agricultural production for supplemental income & home use. Occupancy optional. Farm plan & 2/3 cultivation required.	≤ 40 acres	Water (catchment or surface) Road access
<b>Pastoral (Homestead)</b>	Large lot agriculture specifically for pastoral uses. Occupancy optional. Ranch plan & fencing required.	≤ 1,000 acres	Road access & livestock drinking water
<b>General Agriculture</b>	Intensive or extensive farming or ranching allowed. Uses subject to HRS Chapter 205. May serve as an interim use until opportunities for higher & better uses become available.	TBD	N/A
<b>Special District</b>	Areas requiring special attention because of unusual opportunities and/or constraints. e.g. natural hazard areas, open spaces, raw lands far from infrastructure (difficult to improve), mixed use areas, green-ways	TBD	To be determined (TBD)
<b>Community Use</b>	Common areas for community uses. Includes space for parks & recreation, cultural activities, CBED, & other public amenities	TBD (see standards)	County standards
<b>Conservation</b>	e.g. watersheds, endangered species, sensitive historic & cultural sites	TBD	N/A
<b>Commercial</b>	e.g. retail, business and commercial activities	TBD (see standards)	County standards
<b>Industrial</b>	e.g. processing, construction, manufacturing, transportation, wholesale and warehousing	TBD	County standards

Table ES.1 - DHHL Land Use Designations

Land Use Designation	'UALAPU'E (Acres)	KAPA'AKEA, MAKAKUPAI'A, KAMILOLOA (Acres)	KALAMA'ULA, PALĀ'AU (Acres)	KALAUPAPA, PALĀ'AU (Acres)	HO'OLEHUA (Acres)	TOTAL (Acres)
Residential	25	264	398	0	55	742
Subsistence Agriculture	0	0	213	0	2,138	2,350
Supplemental Agriculture	0	0	0	0	5,862	5,862
Pastoral	0	465	539	0	923	1,927
General Agriculture	299	2,165	2,353	0	3,681	8,498
Special District	85	2,247	1,719	847	660	5,558
Community Use	3	61	83	14	73	234
Conservation	0	0	0	609	46	655
Commercial	0	0	13	4	40	58
Industrial	0	16	0	0	0	16
<b>TOTALS</b>	<b>412</b>	<b>5,218</b>	<b>5,318</b>	<b>1,474</b>	<b>13,478</b>	<b>25,899</b>

Table ES.2 - Acreage Summary by Land Designation Under the MIP







*Industrial* – 16 acres in Kapa'akea are designated Industrial for an existing cinder quarry yard.

Order of magnitude costs are provided for homestead developments. These estimates are conservative figures and there may be opportunities to reduce costs. For example, the Department may work with the County or private developers to share the expense of costly off-site infrastructure improvements such as a wastewater treatment facility.

### **ES.3.1 'UALAPU'E LAND USE PLAN (FIGURE ES.3)**

*Residential Homesteads* – Although the opportunities for developing the land for residential use are constrained by existing natural conditions, the proposed residential area will provide (74) 10,000 sq. ft. residential lots on 25 acres to be developed in two phases. Phase 1 will consist of developing the east end and provide (27) 10,000 sq. ft. lots on 9 acres. Phase 2 will commence after the completion of Phase 1 and will consist of (47) 10,000 sq. ft. lots on 16 acres along the west end.

*General Agriculture* – 299 acres are designated General Agriculture to preserve the land for future uses while making it available to individuals and groups for short-term leases. Much of this land is very rugged and unsuitable for most types of activities and development. Proposed uses for this area could include limited opportunities for diversified agricultural or pastoral use; establishing portions of the mauka regions as an extension of the proposed subsistence access for hunting and gathering purposes; expanding the proposed cultural resource management area around Kaluaonākukui Heiau.

*Special District* – Approximately 85 acres have been designated as Special District in 'Ualapu'e. The upper mauka area under Special District consists of 78 acres and will serve as a natural resource management and subsistence (NRM-SB) area for the protection of several endangered and/or threatened flora species. There are over 40 species whose habitat lies within the upper Moloka'i Forest Reserve. Further this region will also be designated as a subsistence forest area as it was identified by the community as an area currently utilized for gathering forest and stream resources for cultural and subsistence practices.

The Special District Area for Kalauonākukui heiau is comprised of 7 acres and includes a buffer zone that extends out from the physical structure of the heiau to a minimum distance of 100' within the DHHL property. This area outside of the physical boundary is to provide protection but also can be used for the future creation of a cultural resource management (CRM) area that include the development of a cultural garden.

*Community Use* – Approximately 3 acres within 'Ualapu'e have been designated as Community Use. The first Community Use area is comprised of two acres and is designated as a cemetery to serve as the future expansion area of the existing 'Ualapu'e Cemetery. The second Community Use area is deemed for purposes of either a park and/or a community center. Given the richness of cultural and natural resources that exist and the anticipated growth of a new community, community-based initiatives can be considered in creating opportunities for learning, sharing, and sustaining the needs of the community, creating programs for youth or adult camps or other retreat activities that emphasize the relationships between mauka and makai-based ecosystems and wahi pana (traditional sacred places).

The overall cost to develop 'Ualapu'e is estimated to be \$4.0 million (M). Major infrastructure improvements include water storage facilities, individual wastewater systems, and road improvements. 'Ualapu'e is identified as a high priority development area.



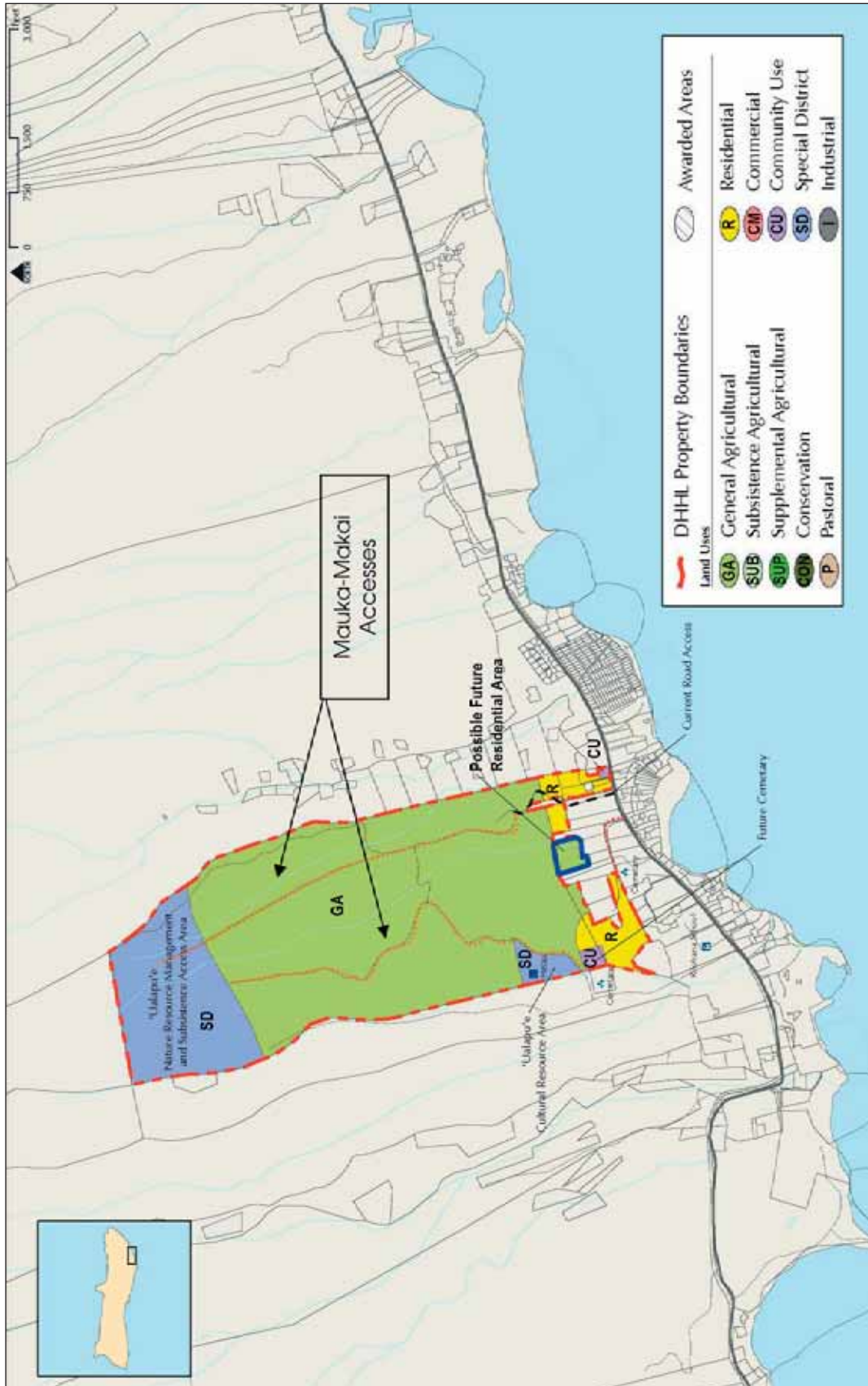


Figure ES.3 - 'Ualapu'e Preferred Land Use Plan





### ES.3.2 KAPA'AKEA, KAMILOLOA, & MAKAKUPA'IA LAND USE PLAN (FIGURE ES.4)

*Residential Homesteads* - Currently, there are 72 residential leases situated on 60 acres ranging from 0.3 to one-acre lots. 45 of these lots are clustered in the coastal homestead of Kapa'akea while the remaining 27 lots are situated along the coastline between Kamiloloa and Makakupa'ia.

The new residential area is comprised of 204 acres situated within the central region of the DHHL parcel and mauka of Kamehameha V Highway and would provide (286) half-acre lots. Existing limitations of the area is that potable water service to the area can only be provided to the 150' elevation level. Any proposed development further mauka would require the provision of booster pump stations and storage tanks which would be cost prohibitive at this time.

*Pastoral Homesteads* – Approximately 465 acres are currently used for Pastoral activity. There are no plans for future expansion of pastoral lots within the area. However, lands that are designated within the General Agriculture areas could be considered for cooperative farming and/or ranching activities.

*General Agriculture* – Over 2,165 acres of these DHHL lands are designated as General Agriculture and the land for future uses while making it available to individuals and groups for short-term leases. Some of these lands could be the site of future homesteads beyond the 20-year planning framework identified in this plan.

*Special District* – Of a total 2,247 acres in Special District, over 2,040 acres of the upland region are designated as Special District as a subsistence forest area that was identified by the community as an area utilized for hunting and gathering forest and stream resources for cultural and subsistence practices. The remaining 207 acres within the Special District designation will serve to protect existing historical sites of a traditional habitat and agricultural complex. This CRM area will be programmatically linked with the restoration and care of One Ali'i and Kaloko'eli fishponds that are situated makai of the CRM area. A small one-acre parcel has been set aside for an on-site wastewater treatment facility for the new residential development.

*Community Use* – Approximately 58 acres of lands have been designated in two areas as Community Uses, consisting of two traditional fishponds that remain intact but are in need of restoration. Plans call for One Ali'i and Kaloko'eli fishponds in collaboration with many others along the south shore of Moloka'i to be restored and managed by local residents for primarily subsistence, cultural and educational uses. An additional 2-acre site was identified as Community Use within the new residential area. It is anticipated that this site would be a neighborhood park to meet the recreational needs of a future and growing community.

*Industrial* – 17 acres in Kapa'akea are designated Industrial for an existing cinder quarry yard.

The overall cost to develop Kapa'akea, Makakupa'ia and Kamiloloa is estimated to be \$29.2 million. Major infrastructure improvements include a new storage and transmission facilities for potable water; a new wastewater treatment facility, and road improvements.



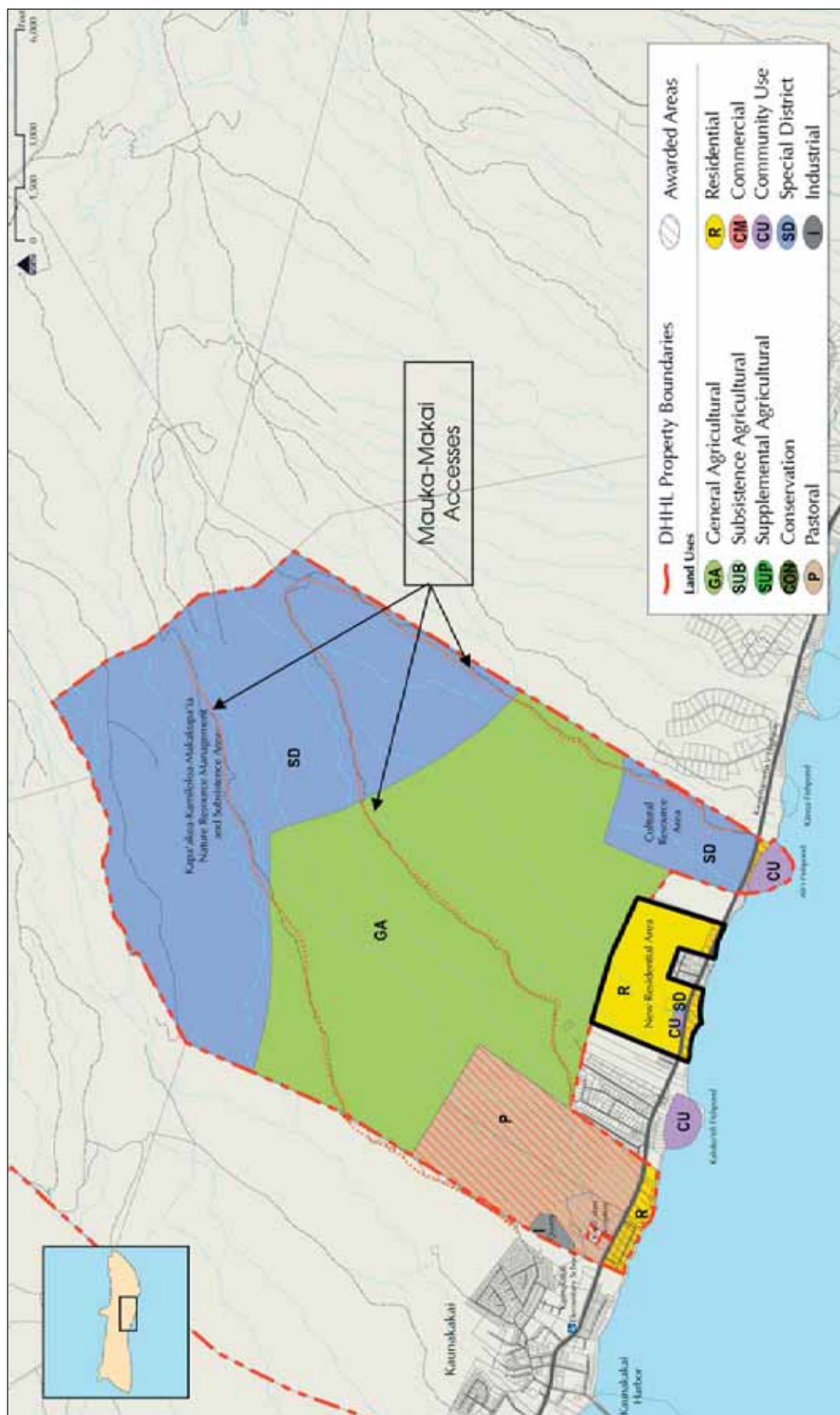


Figure ES.4 - Kapa'akea, Makakupa'ia, Kamiloloa Preferred Land Use Plan







### ES.3.3 KALAMA'ULA LAND USE PLAN (*FIGURE ES.5*)

*Residential Homesteads* - Currently, Kalama'ula has 160 existing or awarded and undeveloped lots on 210 acres. The plan proposes a limited growth of new residential development in Kalamaula that would entail 49 1-acre lots on 70 acres in the eastern portion of the parcel and 8 1-acre lots on 11 acres in the section of the parcel adjacent and makai of Maunaloa Highway.

*Agriculture Homesteads* - In Kalama'ula, 72 lots on approximately 212 acres have been leased for agricultural homesteads and are designated in the MIP as Subsistence Agriculture. These lots vary in size from 2-4 acres and are considered large enough for small-scale agriculture and keeps beneficiaries eligible for certain types of U.S. Department of Agriculture (USDA) loans.

*Pastoral Homesteads* - Three pastoral homestead leases are awarded within Kalama'ula and consist of 539 acres. Some of the land currently designated as General Agriculture under the MIP is leased under a revocable permit to the Moloka'i Homestead Livestock Association for pastoral use.

*General Agriculture* - Approximately 2,353 acres of central interior of Kalama'ula is designated General Agriculture. This will preserve the land for future uses while making it available to individuals and groups for short-term leases.

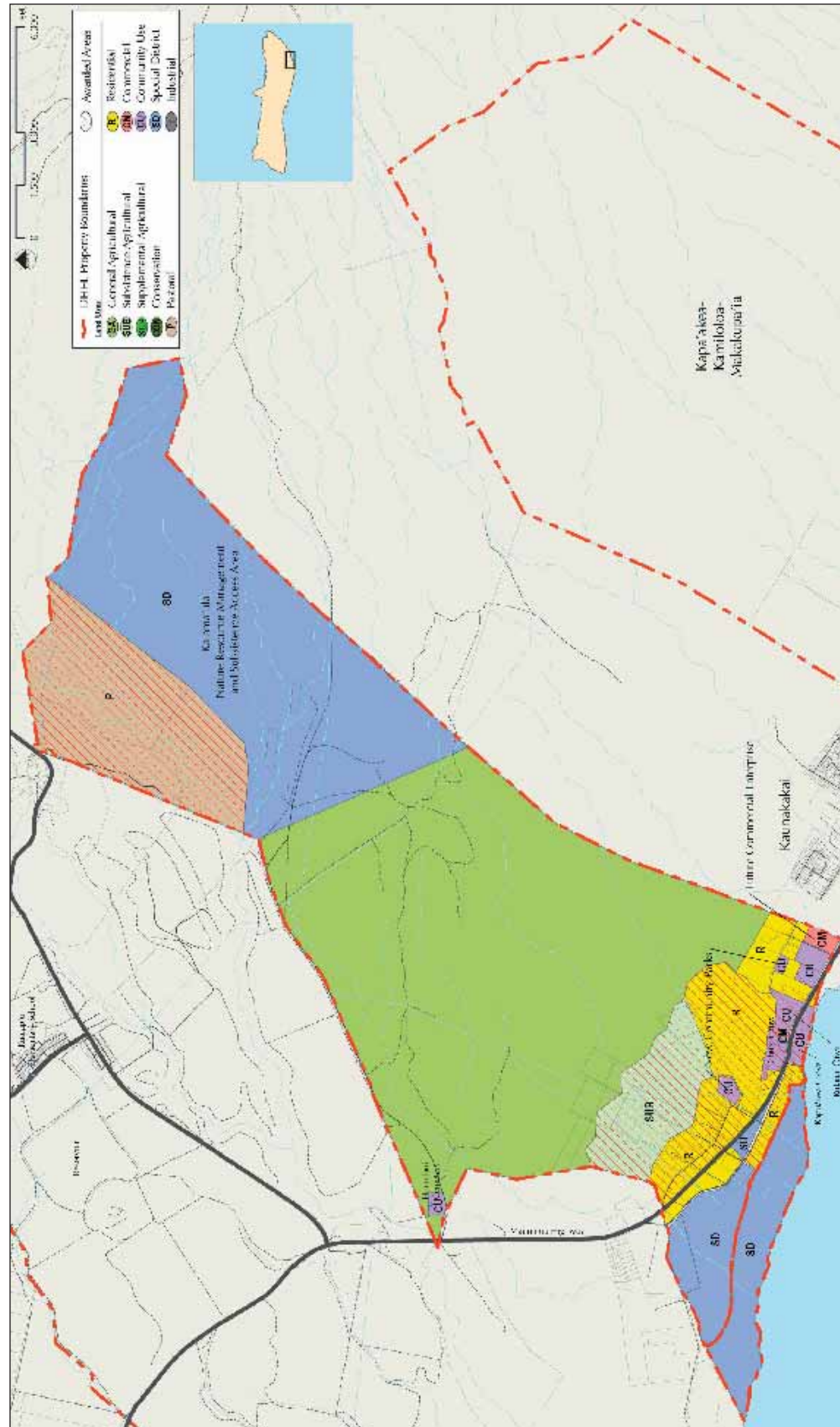
*Special District* - The Kalama'ula tract has three Special District Areas with a total acreage of 1,719 acres. The first area consists of 363 acres within the existing coastal wetlands near the Pālā'au district. The second Special District Area is comprised of 12 acres and is a flood control area located within the southwestern corridor just makai of Maunaloa Highway. The final area is a Natural Resource Management and Subsistence Access (NRM-SB) area in the northeastern corridor to the northern boundary of the parcel consisting of 1,344 acres.

*Community Use* - Approximately 76 acres have been designated for Community Use within Kalama'ula. These areas include the existing "church row," the Kulana 'Ōiwi Multi-Services Center, Homelani Cemetery, Kapuāiwa Grove, and future plans for community park space and kūpuna housing or service center.

*Commercial* - Approximately 12 acres of land are designated in Kalama'ula as Commercial for income generation purposes for DHHL. Potential ideas for commercial development include additional support for research and development of diversified organic and non-Genetically Modified Organisms agricultural products; multi-cropping species for aquaculture; conservation operations for watershed planning and reforestation; a media production facility for community and educational programs; long-term health care services; commercial kitchen to support a native Hawaiian health diet program; a center for recycling goods; and landscaping production area.

The overall cost to develop Kalama'ula is estimated to be \$13.8 M for road improvements and site improvements as well as off-site potable water infrastructure. Individual Wastewater Systems (IWS) will provide wastewater treatment.







### ES.3.4 KALAUPAPA & PĀLĀ'AU (APANA 3) LAND USE PLAN (*FIGURE ES.6*)

The character of Kalaupapa will be retained as a unique community whose legacy is to be defined by its wide range of historical uses.

*Special District* – Approximately 224 acres in the Pālā'au (Apana 3) tract will remain as a forested reserve area that could continue to be used as for recreational purposes. There are no plans for development in this area. Over 621 acres are designated as Special District in the Kalaupapa Peninsula which encompasses the existing historical settlement area. This designation would allow for the current lease agreement with National Park Service (NPS) to continue. However, guidelines will need to be established with the Patient's Advisory Council, Department of Health (DOH), NPS, and DHHL as to further considerations to the long-term uses of this designated area.

*Community Use* – Approximately 7 acres in two areas on the peninsula have been designated as Community Use. The first area is situated along the northern coastal border of the parcel that is out of the historical settlement area. The second Community Use area near the pier landing fronting Awahua Bay and the trailhead leading to the cliff trail would serve a similar future purpose but would require funds for infrastructure. No structures exist within this area but could be utilized for culturally-related activities and access. Community Use sites would be licensed to an organization of native Hawaiian patients.

*Conservation* – The 609-acres of Conservation District along the cliffs is also designated as such under the State Land Use District.

*Commercial* – The MIP emphasizes the creation of a cultural community center in Pālā'au that is appropriate to the perpetuation of the traditional cultural practices of Hawai'i specific to the historical legacy of Moloka'i and Kalaupapa.

This center would assist halau on Moloka'i and other community educational initiatives in building a community center that reflects the values and principles that are invoked through their respective traditional cultural practices. DHHL will seek to develop a wide range of partners in the development of the center's master plan. It is envisioned that this center could be a hub of community economic opportunity that through the creation of programs that stem from the people of Moloka'i could be used to reach fellow kamaaina and local residents as well as scholars and visitors from around the world.

Major improvements to infrastructure were only considered for the Pālā'au (Apana 3) parcel and include site preparation, provision of water and utilities for the proposed commercial area. The total cost is approximately \$5.8 M for transport and storage of potable water; road site preparation; drainage; and electricity for the new center.









### ES.3.5 HO'OLEHUA-PĀLĀ'AU (APANA 1 & 2) LAND USE PLAN (FIGURE ES.7)

The general approach for the land use plan of Ho'olehua is to maintain the integrity of large parcels of agricultural land for existing and future agricultural use while assessing where future homestead growth can be directed to minimize impacts to agriculture activities. The plan evaluated necessary infrastructure development or improvements to provide the means for multiple generations of families to live and work together. A major limiting factor currently is providing potable and irrigation water from existing sources to meet anticipated demand.

*Residential Homesteads*—There are two existing areas that comprise approximately 55 acres in Ho'olehua that are designated as Residential. The first area is bounded by Farrington Avenue, Pu'u Kape'elua Avenue, and Pu'u Kapele Avenue and consists of half-acre to 5 acre lots that are serviced by paved roads, potable and irrigation water. These lots are considered to be the central emphasis for a rural residential core area. Many of the homesteaders that reside on these lots have detached 40 acre agricultural lots in lands south of Keonelele Avenue.

*Agriculture Homesteads* – Approximately 5,862 acres have been designated as Supplemental Agriculture. Within the MIP, these lands are comprised of the existing 40 acre parcels that have been split into two parcels, one consisting of 35 acres designated as Supplemental Agriculture. The remaining five acres within these parcels are designated as Subsistence Agriculture. The MIP designates 287 lots on 2,138 acres as Subsistence Agriculture. These lots vary in size from 2-4 acres and are considered large enough for small-scale agriculture and keep beneficiaries eligible for certain types of U.S. Department of Agriculture (USDA) loans. Several alternative lot schemes were developed and discussed among interested community members which included ohana members and the Moloka'i Homestead Farmers Alliance. The preferred option is to split the 5-acre Subsistence Agricultural lot into one 2-acre and 3-acre parcel.

*Pastoral Homesteads* – Over 697 acres of the 922 acres of pastoral land are situated in the northwest section of the Ho'olehua tract. The remaining 225 acres are situated along the northern coastline. Fifteen of the existing 24 lots have been awarded.

*General Agriculture* – Most of the 3,681 acres designated as General Agriculture consists of rugged or difficult terrain without existing infrastructure for irrigation water and limited road access via unimproved dirt roads.

*Special District* – There are two designated Special District areas within Ho'olehua. The first is a 372 acre parcel in the northwest section of the tract which is currently leased to the U.S. Air Force until 2013 as a radio receiver site. Community members and historical documents verify that this area has significant cultural sites that warrant future preservation. The second Special District Area is comprised of 288 acres and is situated along the northeastern tract that lead to the Conservation Area above the Kalaupapa Peninsula. The area includes Pu'u Eleuweuwe (1,145 ft). No development is proposed in this area as this area has been designated as a Nature Reserve with a medium density of endangered or threatened plant life.

*Community Use* – The concentration of 73 acres designated as Community Use are located near the central core of Ho'olehua and the northwest corner of the parcel. The land use designation applies to existing facilities including Lanikeha Community Center, Ho'olehua Fire Station, Ho'olehua Cemetery, Moloka'i High School, several churches and other educational and social service organizations that have revocable licenses to utilize DHHL lands, which comprise approximately 23 acres. Future proposed community uses include an expansion of recreation facilities at the Lanikeha Community Center. The purpose of these lands is to complement the existing rural residential community.





An additional 50 acres at Mo'omomi have also been designated as Commercial Use. This area represents part of a community resource conservation/stewardship agreement with the Department of Land and Natural Resources (DLNR) for coastal and marine resources at Mo'omomi. This use is a quintessential representative of the traditional Hawaiian value of mālama 'āina. The land is managed by a community group under these principles.

*Conservation*–The 46-acres of Conservation District along the northeastern section of the Ho'olehua tract are also designated as such under the State Land Use District.

*Commercial*– Within Ho'olehua, approximately 40 acres have been designated for Commercial use. Existing commercial use areas include the U.S. Post Office and First Hawaiian Homes Credit Union that are located on the southeast corner of Farrington Avenue and Pu'u Peelua Avenue. As a focal node, the northeastern corner of the same intersection has been designated as Commercial for other necessary facilities that would need to accommodate the potential needs of a growing community in Ho'olehua.

## **ES.4 PRIORITIES FOR RESIDENTIAL DEVELOPMENT**

One agricultural homestead community in Ho'olehua and the two residential communities of 'Ualapu'e and Kapa'akea, Kamiloloa, and Makakupa'ia were identified as priority areas. The residential areas are undeveloped lands with provisions of road access and an available supply of potable water. The non-prioritized residential area of Kalama'ula is also on undeveloped land but part of an established residential community.

These priority areas were determined by an assessment of beneficiary preferences, the location of the parcels, the physical conditions of the land, and development costs. In the ranking of these priorities, it was determined that the awarded but unbuilt Nā'iwa Agricultural homestead development would be the first priority for completion.

At full build-out, the 361 residential lots provided in the two areas address 90% of the housing goals of the DHHL General Plan. Although not a priority due to high development costs, the provision of lots in Kalama'ula would also exceed the goals of the General Plan. Further, the addition of homes in the proposed subdivision of agriculture lots in Ho'olehua, which is currently restricted by an inadequate potable water source for a full build-out of subdivided lots, would further add to the housing total and contribute to reducing the waiting list.

The residential community in 'Ualapu'e is the first priority of the MIP for new residential areas and is planned for development in two phases. This community includes 74 residential homesteads and approximately 3 acres of community use that includes a park and cemetery.

### **ES.4.1 RESIDENTIAL PRIORITY 1: 'UALAPU'E**

'Ualapu'e was selected as the first priority for several reasons. The area was ranked high by beneficiaries in the survey conducted at the beginning of the planning process. Comments at the community meetings reinforced the interest in the 'Ualapu'e area. The area is nestled along the southeastern shores of Moloka'i island. The scenic views, access to potable water and reasonable infrastructure costs also make it practical to develop an appropriately scaled community in this area.

The west end phase is composed of 47 house lots on 16 acres. Road access will be provided from Kamehameha V Highway and along an existing unimproved road that will be modified to County standards for rural areas as outlined in the Moloka'i Community Plan. This west end area is phased first because it is in closest proximity to existing infrastructure including water storage and pump as



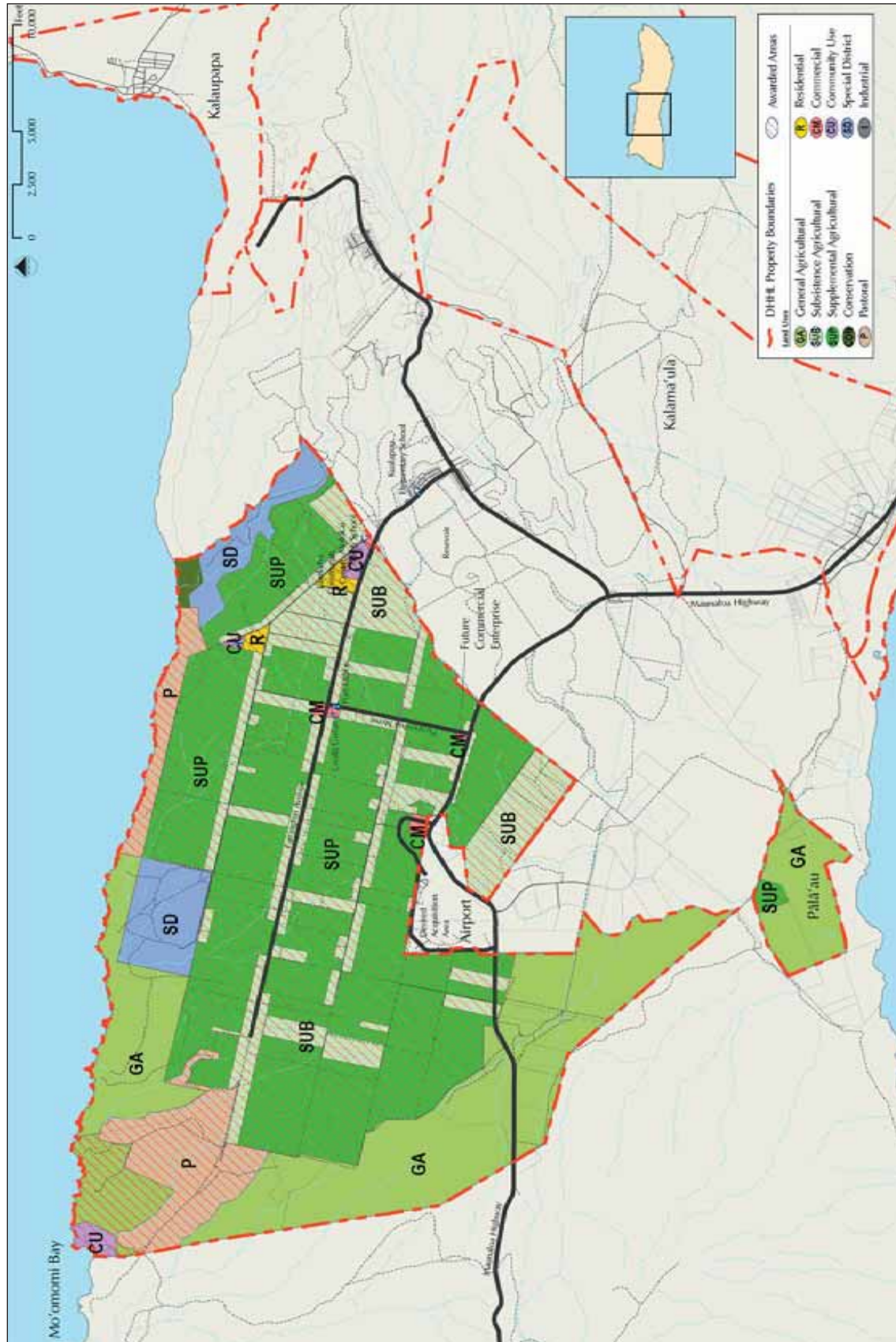


Figure ES.7 - Ho'olehua and Pālā'au (Apana 1) Preferred Land Use Plan





well as in close proximity to existing community uses such as Kilohana School and the cemetery. Also with this development, it is anticipated that a cultural resource management plan will be in place for Kalauonākukui Heiau that may include some buffer and physical landscaping elements to protect the site.

#### **ES.4.2 RESIDENTIAL PRIORITY 2: KAPA'AKEA, KAMILOLOA, AND MAKAKUPA'IA**

The second residential priority area is Kapa'akea, Kamiloloa, and Makakupa'ia homestead which is currently comprised of 72 lots on 40 acres. The area has a rich cultural resources and community area such as One Alii Fishpond but is currently in need of a neighborhood residential park. Tentative plans which will require future negotiations with the existing lessee are to acquire approximately 2 acres adjacent to the existing residential community and provide a coastal neighborhood park.

Kapa'akea, Kamiloloa, and Makakupa'ia was selected as the second priority due to its gently sloping topography, access to an available potable water source with sufficient supply, and reasonable infrastructure costs. Also, Kapa'akea, Kamiloloa, and Makakupa'ia is a desirable residential location because of its proximity to Kaunakakai town.

A single phase of development for the middle portion of the tract is proposed. This phase will yield 286 half-acre lots on 204 acres. To support this buildout, an onsite wastewater treatment facility will be required.





## TABLE OF CONTENTS

<b>1.0 Introduction</b>	
1.1. Overview & Background of DHHL .....	1-3
1.2. DHHL Planning System .....	1-4
1.3. Molokai Island Plan Planning Process .....	1-5
1.4. Planning Team .....	1-7
<b>2.0 Island-Wide Analysis</b>	
2.1 Island Profile .....	2-1
2.2 Overview of Beneficiaries .....	2-4
2.3 Land Use Designations .....	2-7
2.4 Infrastructure Cost Estimates .....	2-11
<b>3.0 'Ualapu'e</b>	
3.1. Existing Conditions .....	3-1
3.2. Opportunities and Constraints .....	3-1
3.3. Community Concerns .....	3-3
3.4. Land Use Plan .....	3-4
<b>4.0 Kapa'akea-Kamiloloa-Makakupa'ia</b>	
4.1. Existing Conditions .....	4-1
4.2. Opportunities and Constraints .....	4-1
4.3. Community Concerns .....	4-3
4.4. Land Use Plan .....	4-4
<b>5.0 Kalama'ula</b>	
5.1. Existing Conditions .....	5-1
5.2. Opportunities and Constraints .....	5-1
5.3. Community Concerns .....	5-3
5.4. Land Use Plan .....	5-4
<b>6.0 Kalaupapa-Pālā'au (Apana 3)</b>	
6.1. Existing Conditions .....	6-1
6.2. Opportunities and Constraints .....	6-1
6.3. Community Concerns .....	6-4
6.4. Land Use Plan .....	6-4
<b>7.0 Ho'olehua-Pālā'au (Apana 1 &amp; 2)</b>	
7.1. Existing Conditions .....	7-1
7.2. Opportunities and Constraints .....	7-1
7.3. Community Concerns .....	7-4
7.4. Land Use Plan .....	7-4
<b>8.0 Development Priorities and Phasing Schemes</b>	
8.1. Priority Areas .....	8-2







## 9.0 Conclusion

9.1. Island Plan Goals and Objectives .....	9-1
9.2. Residential Priority .....	9-2
9.3. Agriculture and Pastoral .....	9-3

## 10.0 References

10.1. Bibliography .....	10-1
10.2. GIS Data .....	10-4

## LIST OF FIGURES

Figure 1.1	DHHL Landholdings on Moloka'i .....	1-2
Figure 1.2	DHHL Planning System.....	1-4
Figure 1.3	Study Methodology .....	1-6
Figure 2.1	Award Type Preferences.....	2-5
Figure 2.2	Residential Homestead Preferences .....	2-6
Figure 3.1	DHHL Parcel in 'Ualapu'e.....	3-2
Figure 3.2	'Ualapu'e Preferred Land Use Plan.....	3-5
Figure 4.1	DHHL Parcel in Kapa'akea, Makakupa'ia, Kamiloloa .....	4-2
Figure 4.2	Kapa'akea, Makakupa'ia, Kamiloloa Preferred Land Use Plan .....	4-5
Figure 5.1	DHHL Parcel in Kalama'ula.....	5-2
Figure 5.2	Kalama'ula Preferred Land Use Plan.....	5-5
Figure 6.1	DHHL Parcel in Kalaupapa-Pālā'au. ....	6-2
Figure 6.2	Kalaupapa-Pālā'au Land Use Plan .....	6-5
Figure 7.1	DHHL Parcel in Ho'olehua-Pālā'au .....	7-2
Figure 7.2	Ho'olehua-Pālā'au Preferred Land Use Plan.....	7-6
Figure 8.1	'Ualapu'e Residential Phasing .....	8-3
Figure 8.2	Kapa'akea - Kamiloloa – Makakupa'ia Residential Area.....	8-4

## LIST OF TABLES

Table 2.1	DHHL Land Use Designations .....	2-7
Table 2.2	Summary of Existing and Proposed Land Use Designations.....	2-8
Table 2.3	Infrastructure Improvements Included in Cost Estimates.....	2-12
Table 3.1	'Ualapu'e Total Infrastructure Costs .....	3-4
Table 3.2	'Ualapu'e Infrastructure Costs.....	3-7
Table 4.1	Kapa'akea, Makakupa'ia, Kamiloloa Total Infrastructure Costs .....	4-6
Table 4.2	Kapa'akea, Makakupa'ia, Kamiloloa Infrastructure Costs .....	4-7
Table 5.1	Kalama'ula Total Infrastructure Costs.....	5-6
Table 5.2	Kalama'ula Infrastructure Costs .....	5-6
Table 6.1	Kalaupapa-Pālā'au Infrastructure Costs.....	6-7
Table 7.1	Ho'olehua-Pālā'au Total Infrastructure Costs .....	7-7
Table 7.2	Ho'olehua-Pālā'au Infrastructure Costs .....	7-7
Table 8.1	'Ualapu'e Residential Phases Infrastructure Costs .....	8-4
Table 8.2	Kapa'akea- Kamiloloa-Makakupa'ia Residential Phases Infrastructure Costs .....	8-4
Table 9.1	Acreage Summary by Land Designation Under the MIP .....	9-1
Table 9.2	Summary of Lot Development & Infrastructure Costs .....	9-2





**APPENDICES (IN SEPARATE REPORT)**

<i>Appendix A</i>	Engineering Cost Estimates
<i>Appendix B</i>	Comments on Plan
<i>Appendix C</i>	Community Meeting Attendees
<i>Appendix D</i>	Lessee and Applicant Survey Report
<i>Appendix E</i>	Fact Sheets







Section 1.0

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Introduction





## 1.0 INTRODUCTION

The Moloka'i Island Plan (MIP) provides recommendations for the future use of the 25,899 acres on Moloka'i under the jurisdiction of the Department of Hawaiian Home Lands (DHHL) (*Figure 1.1*). The plan is intended to guide overall land use patterns and development on Moloka'i for the next 20 years.

The plan assigns Land Use Designations (LUDs) for all DHHL lands on Moloka'i and identifies specific areas for priority homestead development.

This introductory section provides an overview of DHHL and summarizes the MIP planning process.

Section 2.0 of the plan provides an overview of the island and the beneficiary population and their preferences. This section also introduces DHHL's 10 land use designations and summarizes the land uses under each LUD in the Plan. A brief overview of infrastructure costs is also provided in this section.

Sections 3.0 to 7.0 detail the land use plan for each of the five DHHL planning areas on Moloka'i. Each section begins with a general discussion of the area's existing natural and built environment, opportunities and constraints for improvements and future growth potential in the area. These sections also propose land use designations, development themes, and include a discussion of infrastructure improvements and an estimate of improvement costs.

Section 8.0 recommends the previously awarded Nā'iwa Agricultural Subdivision and the future planned residential development of 'Ualapu'e and Kapa'akea, Kamiloloa, and Makakupa'ia as the priority areas of the MIP. This section also includes a discussion of the phasing for the non-priority areas.

Section 9.0 provides a summary of land use designations for the island plan.

Section 10.0 provides a list of references used in developing the plan.

The concluding section summarizes the major findings of the MIP and proposes points for future planning studies.

### **PLAN OVERVIEW**

#### **1.0 Introduction**

- Overview of DHHL
- Planning process

#### **2.0 Island-Wide Analysis**

- Island profile
- Beneficiary preferences
- Land use designations
- Infrastructure cost estimates

#### **3.0 - 7.0 Land Use Plans**

- Existing conditions
- Opportunities and Constraints
- Community Concerns
- Land use plan

#### **8.0 Priorities & Phasing**

#### **9.0 Land Use Summary**

#### **10.0 References**



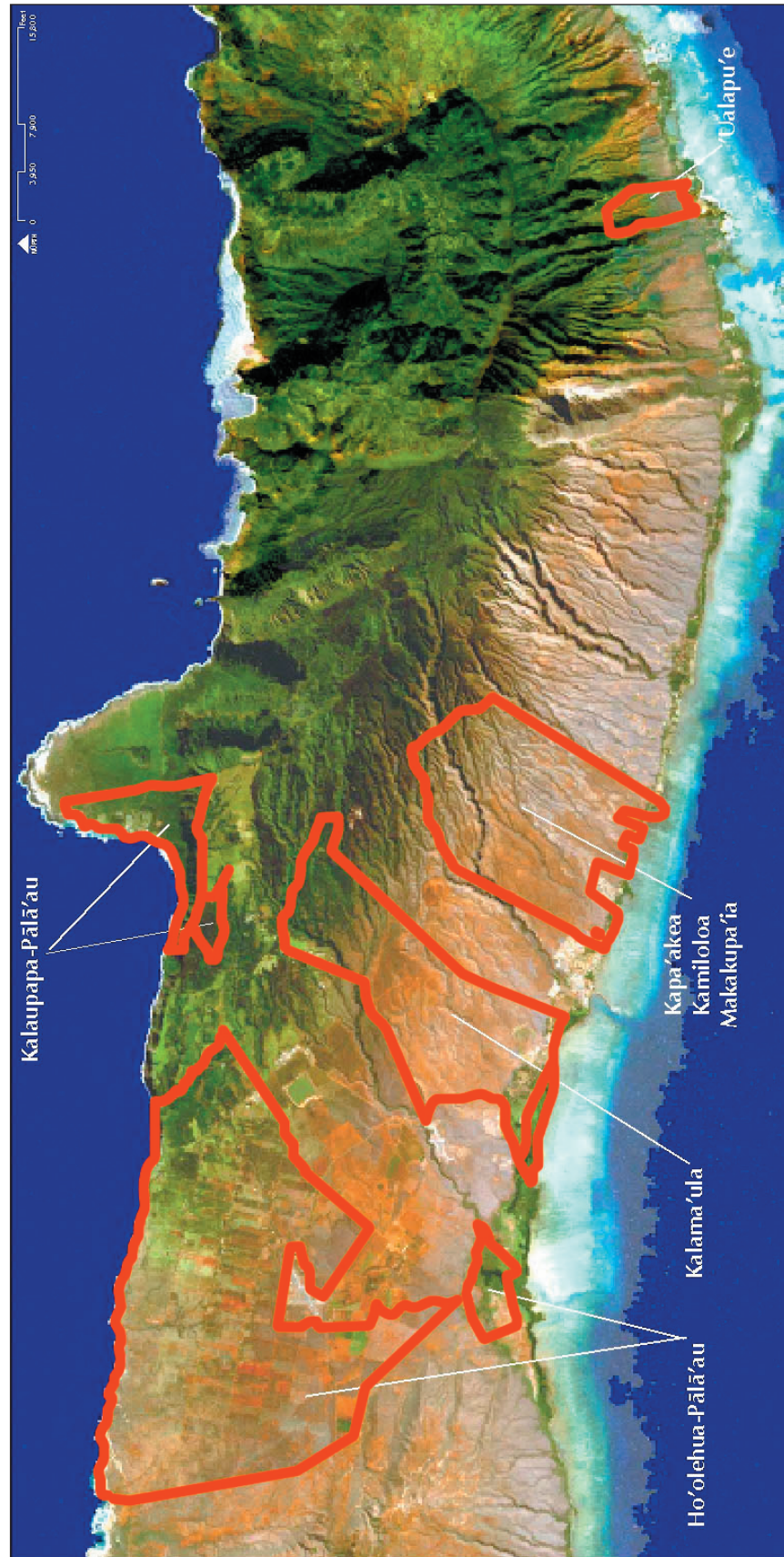


Figure 1.1 - DHHL Landholdings on Moloka'i





## 1.1 OVERVIEW & BACKGROUND OF DHHL

The mission of DHHL is to manage its landholdings held in trust effectively and to develop and deliver these lands to native Hawaiians.

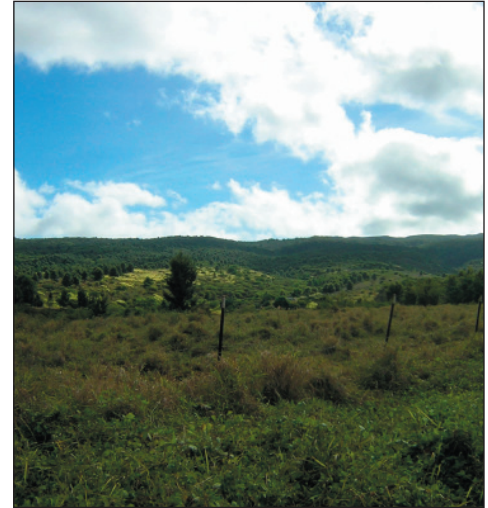
The Hawaiian Homelands Program was started in 1921 with the passage of the Hawaiian Homes Commission Act ("Act"), which was enacted by the U.S. Congress as a homesteading program to place native Hawaiians (defined as "any descendant of not less than one-half part of the blood of the races inhabiting the Hawaiian Islands previous to 1778") on designated lands. The introduction and successful passage of the Act was due to the committed efforts of Prince Jonah Kūhiō Kalaniana'ole, known to his people as Ke Ali'i Maka'āinana (The People's Prince). Initial implementation of the Act was difficult at the onset due to a lack of financial resources and very little usable land.

The program was faced with numerous challenges its first 70 years of its enactment. However, specific legislative amendments ratified between 1990 and present have improved the role and organization of DHHL, its finances and land base, and further asserted its rights of adequate water.

The main method by which DHHL serves its native Hawaiian beneficiaries is through the provision of 99-year homestead leases. The leases are provided for specific land use activities that include residential, pastoral, and agricultural uses for an annual fee of one dollar.

As of March 2005, 7,504 homestead lease awards have been issued, while approximately 35,148 applications remain un-awarded. However, the 35,148 count reflects approximately 20,976 individual applicants since a qualified applicant may apply for two types of awards. One of the highlighted achievements cited in the 2004 Annual Report is that nearly 2,100 acres of developable land acquired by the Department will result in future homeownership opportunities for approximately 4,000 beneficiaries.

Award recipients are required to make arrangements to finance home construction and renovations as well as financing agricultural or ranching activities on their awarded land. The Department works with lessees to offer direct loans or loan guarantees for home purchase or construction/renovation as well as development of farms and ranches. The Department has also explored new approaches to home building by developing a partnership with Habitat for Humanity, developing "self-help" housing projects, and offering kūpuna rentals.



*DHHL Mission:  
To manage the Hawaiian Home  
Lands Trust effectively, and  
to develop and deliver land to  
Native Hawaiians.*



*Prince Jonah Kūhiō Kalaniana'ole  
Author of Hawaiian Homes Commission Act*







The Department manages land not currently used for homesteading and negotiates leases that generate income and license agreements for public uses such as utilities or for homestead organizations. Approximately 43% of the 200,000 plus acres of DHHL lands statewide are managed for long and short term uses. Leases keep lands productive while minimizing trespassing, illegal dumping, and vandalism activities while protecting its liability. The leases also generate revenues for the homesteading program. Statewide revenues from general leases, revocable permits, and licenses were \$ 8.25 million in fiscal year 2003-2004.

## 1.2 DHHL PLANNING SYSTEM

The MIP is part of the DHHL Planning System (Figure 1.2), which emanates with the Department's General Plan (GP) that was approved by the Hawaiian Homes Commission in February 2002. The GP provides a set goals and objectives in specific focus areas that include: land use planning, residential uses, agricultural and pastoral uses, water resources, land and resource management, economic development, and building healthy communities.

### **DHHL STATEWIDE PROFILE**

- 7,500 homestead leases
- 33,000 applications unawarded
- 20,000 individual applicants
- 200,000 plus acres



Figure 1.2 - DHHL Planning System





With respect to the island of Moloka'i, the planning objectives of DHHL for the next 20 years include the following:

- Designate all DHHL lands with one of the land use categories under the General Plan;
- Deliver at least 400 Residential homesteads, or an average of 20 new lots per year;
- Provide space for and designate a mixture of appropriate land uses, economic opportunities and community services in a native Hawaiian-friendly environment;
- Provide agriculture and pastoral homestead lots for subsistence and supplemental purposes;
- Provide general lease agriculture and pastoral lots of adequate size for commercial farming or ranching business purposes by native Hawaiians.
- Identify and establish a clear understanding of existing water resources available to the Hawaiian Home Trust;
- Preserve and protect significant natural, historic and community resources on Trust lands;
- Manage interim land dispositions in a manner that is environmentally sound and does not jeopardize their future uses;
- Allow native Hawaiian use of natural resources on Trust lands for traditional and cultural purposes;
- Use no more than 1% (or 266 acres on Moloka'i) of DHHL lands for Commercial and Industrial uses by 2014; and
- Establish and implement a planning system that increases beneficiary participation in the development and use of Hawaiian home lands and improves communications between DHHL and the beneficiary community.

### 1.3 MOLOKA'I ISLAND PLAN PLANNING PROCESS

The MIP was developed over a 10-month period. Adoption of the plan is scheduled for June 2005 (*Figure 1.3*).

#### 1.3.1 BACKGROUND INFORMATION

The planning process began in August 2004 by looking at environmental, cultural, and socioeconomic data for the island of Moloka'i. A Geographic Information System (GIS) was developed to analyze the environmental, socioeconomic, and cultural features of the property. The types of data analyzed are summarized in the table to the right.

This background research also included a beneficiary survey conducted by SMS Research which gathered information on beneficiary lease preference, location preference, and desired community facilities.

#### **DHHL GENERAL PLAN GOALS**

- Land use planning
- Uses for residential, agriculture and pastoral land
- Water resources
- Land and resource management
- Economic development
- Building healthy communities



#### **BACKGROUND INFORMATION**

- Topography & elevation
- Streams & waterways
- Soil types & productivity
- Threatened and endangered species
- Wetlands & flood zones
- Rainfall
- Natural hazards
- Public facilities
- Cultural sites
- State land use designations
- County zoning and General Plan





This information is summarized in fact sheets included in Appendix F and in a Baseline Information Report that was submitted in December 2004. This information was also presented in a series of one-on-one meetings with representatives from homestead associations and beneficiary groups, State and local government agencies, and private land owners. These smaller working group sessions were supplemented by a series of community meetings held in 'Ualapu'e, Kalama'ula, Ho'olehua, and Kalaupapa. This approach continued to be a source of community guidance throughout the planning process in evaluating existing conditions and proposing any planning considerations.

### 1.3.2 ALTERNATIVE DEVELOPMENT SCENARIOS

Several development alternatives were developed for each DHHL area based on the background information and input from the community, agencies, and private landowners. Generally, the alternatives provided a range of low, medium, and high intensity development options. To assess the range of necessary infrastructure improvements, order of magnitude costs were calculated by Engineering Solutions, Inc.

These alternatives were presented to the DHHL staff, the Hawaiian Homes Commission (HHC), and to the community at two meetings on Moloka'i. Beneficiaries were also given the opportunity to tour the DHHL properties and were encouraged to make suggestions and critique the alternatives.

### 1.3.3 PREFERRED DEVELOPMENT SCENARIOS

Preferred Development Alternatives were chosen based on community input and DHHL policies. The planning factors used to assess these alternatives are summarized on the following page. The alternatives were presented in smaller working groups, to DHHL Staff, and to the community at a meeting held in Ho'olehua on Moloka'i. Comments were recorded at each presentation.

### PARTICIPANTS IN PLANNING

- Homestead Associations
- Individual Homesteaders
- Hui Kako'o
- State DBEDT
- State DOT (Harbors, Highways, Airport)
- State DLNR (OCCL, SHPD, DOFAW, DSP)
- State DOA
- State DOE
- County Water Supply
- County Planning
- County Public Works and Environmental Management
- County Fire Control
- County Police
- County Parks and Recreation
- Empowerment Zone
- USDA Rural Development
- Agricultural Extension
- Kalaupapa Patient's Council
- National Park Service
- Community Service Organizations
- Moloka'i Homestead Farmers Alliance
- Moloka'i Properties Ltd.

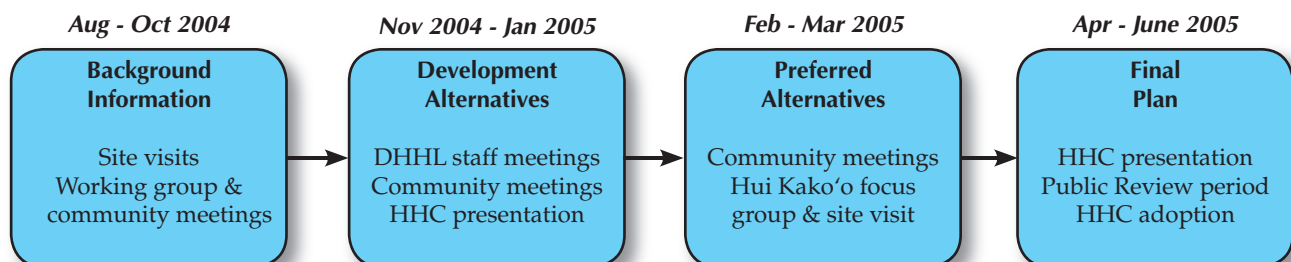


Figure 1.3 - Study Methodology







#### 1.3.4 FINAL PLAN

A staff submittal report was presented to the Hawaiian Homes Commission in early May 2005 on Moloka'i. A decision was made by the HHC to defer the adoption of the plan to allow one final opportunity for public comment and review. The plan was approved for adoption by the HHC in June 2005.

#### 1.4 PLANNING TEAM

The DHHL Planning Office provided the primary oversight in the development of the MIP. The planning consultant team was led by Group 70 International, Inc. which gathered the background information, coordinated the public meetings, solicited input from beneficiaries and other interests, and developed the alternatives and preferred land use plans that define the Island Plan. In support, SMS Research conducted the beneficiary survey while Engineering Solutions, Inc. conducted a preliminary infrastructure analysis that evaluated necessary improvements and the associated costs for those improvements.

A key component to the plan was hosting a series of smaller group meetings composed of representatives from the homestead associations, Hui Kako'o 'Āina Ho'opulapula, local and state government agencies, and private landowners convened several times over the course of the 10-month period to provide input into the planning process. In addition, beneficiaries commented on the proposed land use alternatives at three community meetings in February and April 2005 and were encouraged to provide comment and input throughout the process. A formal two-week public comment and review period was provided in May with the final plan prepared in June 2005.

#### **PLANNING FACTORS**

- **Beneficiary preferences (survey)**
- **Community input**
- **Returns (number of lots)**
- **Infrastructure costs (roads, sewage, water, etc.)**
- **Land conditions**
- **Protection of cultural sites**
- **Time frame (20+ years)**
- **Community views**
- **Community based economic development (CBED) opportunities**
- **DHHL revenue generation through commercial development**
- **Suitability to State and County land use designations**
- **Evaluating adjacent land uses**
- **Integrating DHHL General Plan goals**
- **Applying DHHL policies**





Section 2.0

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Island-Wide Analysis





## 2.0 ISLAND-WIDE ANALYSIS

This island-wide analysis sets the context for the Island Plan and provides an overview of the Department's Moloka'i lands, beneficiary preferences, and proposed land uses.

### 2.1 ISLAND PROFILE

Moloka'i is the fifth largest island in the Hawaiian chain, comprised of a land area of approximately 170,000 acres. Located 26 miles southeast of O'ahu and 9 miles northwest of Maui, Moloka'i is 38 miles long and 10 miles wide with approximately 88 miles of beautiful coastline dotted by many historic Hawaiian fishponds. DHHL lands on the island consist of approximately 26,000 acres and comprise 15 % of the total land area of Moloka'i

The total island population of Moloka'i is almost 7,404 people, of which 1,741 people reside on DHHL lands<sup>1</sup>. The main town of Kaunakakai is the center of commerce and government services for the island. The island is part of Maui County except for the Makanalua Peninsula that makes up Kalawao County, home of the Kalaupapa settlement area.

Moloka'i is often described as the "most Hawaiian" of all the islands or the last surviving piece of the old rural Hawai'i. This can be attributed to the people and their way of life. Moloka'i has the greatest proportion of native Hawaiian people, more than any of the other islands (62.1%). This may be due in large part to the fact that Moloka'i was the site of the first lease awards given out by the Department of Hawaiian Home Lands in 1923.

The native Hawaiian's inextricable link to the land is apparent and essential on this small island. A 1994 study commissioned by the State of Hawai'i found that subsistence activities supplied 28% of the food to Moloka'i residents and 38% of the food to native Hawaiians on Moloka'i. The people of Moloka'i live off the land, therefore preserving access to fishing, hunting, and gathering sites is critical to maintaining the lifestyle and livelihood of the Island. Moloka'i people supplement their diet with subsistence out of necessity as well as lifestyle.

In the 2000 U.S. Census, Hawaiian Home Lands were added for the first time as a geographic entity type and included statistics for all areas of DHHL lands on Moloka'i except for 'Ualapu'e. According to the 2000 U.S. Census, statistics reveal that while the unemployment rate for the entire State hovered around 4.5%, the rate for Moloka'i residents was 11.2%, while the



Map of the Hawaiian Islands

### **MOLOKA'I POPULATION OVERVIEW**

- **Total land area - 170,000 acres**
- **Total island population - 7,404**
- **Largest population center - Kaunakakai (2,726 people)**
- **Major ethnic group on the island are native Hawaiians (62.1%)**
- **38% of food supply for native Hawaiian families is provided through subsistence activities**

<sup>1</sup> 2003 State of Hawai'i Data Book, Table 1.17 Resident Population of Hawaiian Home Lands, by Native Hawaiian Race, by Island: 2000





unemployment rate for the population residing on Hawaiian Home Lands on Moloka'i was 12.9%. The statistics are similar for the percentage of population below the poverty level; at a statewide level 10.7% of the population falls under the poverty line, whereas on Moloka'i it is 16.0% and for Hawaiian homesteaders on Moloka'i it is 15.7%. Additionally, median income for Moloka'i residents is quite a bit lower than State averages. Moloka'i's median income is \$33,398 compared to \$49,820 for the State as a whole, and Hawaiian Homesteaders on Moloka'i had an average median income of \$37,714.

To address the challenging economic situation on the island, community members worked together to apply to the United States Department of Agriculture (USDA) to become designated as an Empowerment Zone community. The application outlined some less than desirable statistics regarding the economic situation of the island.

- 24.4% of the island resident population received food stamps
- 32.5% of the resident population received Medicaid
- 20% of the population 18 years and over does not have a high school diploma

The community developed a detailed strategy to move from the island's current situation, which they described as a "post-plantation/under-developed economy remnant of a departed pineapple growing and processing economy" toward greater economic prosperity.

The application acknowledged recent efforts by the State Government to support the development of diversified agriculture and tourism as a means of compensating for the departure of the pineapple industry, but outlined the need for more assistance. The Moloka'i community efforts paid off and in 1999 the island was granted Empowerment Zone status which means approximately \$7 million in grant funds over 10 years.

A variety of projects have been or are being funded by the Empowerment Zone initiative such as the development of an island slaughter house, Brownfield redevelopment, establishment of a native plant nursery, a commercial kitchen for agricultural growers providing a limited but emerging stimulus for new job growth.

### **MOLOKA'I ISLAND ECONOMIC OVERVIEW**

- **Unemployment rate - 11.2%**
- **Below poverty level - 16%**
- **Median income - \$33,398**

### **MOLOKA'I HOMESTEAD ECONOMIC OVERVIEW**

- **Unemployment rate - 12.9%**
- **Below poverty level - 15.7%**
- **Median income - \$37,714**



*Kaunakakai Town, Central Moloka'i*



*Main port of Kaunakakai Harbor (Photo by U.S. Army Corps of Engineers, Honolulu District)*







### 2.1.1 TOURISM

Tourism is one of the primary economic generators within Maui County. Growth in domestic and international arrivals by air to Moloka'i in 2002 and a longer length of stay by these visitors contributed to a 14.9% increase in visitor days for Moloka'i. Statistics from the State Department of Business Economic Development and Tourism indicate that for all the visitors to the State of Hawai'i in 2002, the average daily visitor census for Maui County was 42,742. Moloka'i's share of the County's daily census was 955 visitors with the majority seeking some level of eco-tourism based experiences like hiking the trail to Hālawā Valley on the east end of the island.<sup>2</sup>

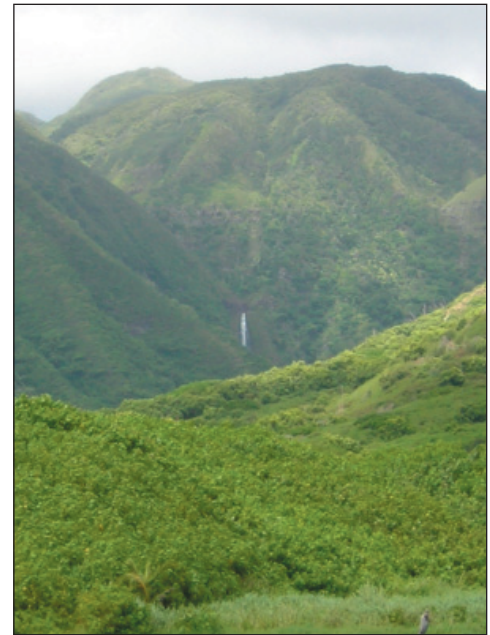
In 2003, 94,106 people visited the island of Moloka'i a 25% increase from 2002. Approximately 38% of these visitors were first time guests to the island. Approximately 50% of visitors to Moloka'i also visited the islands of Maui and O'ahu as part of their vacation experience.

Future growth in tourism on Moloka'i is based upon marketing trends. Currently, Moloka'i has 33 visitor "properties" that are comprised of six condominium hotels (including the Moloka'i Shores), two hotels (Hotel Moloka'i and The Lodge and Beach Village at Moloka'i Ranch), 2 bed and breakfast establishments, and 22 individual vacation units. Among the 33 properties, there are 299 units of which 140 units are within the condominium hotels and an additional 114 units are in the two hotels. Most of the rooms (44%) are designated as "standard" units that range in price between \$101 and \$250 a night.

Currently there are no planned additions or new visitor development projects for Moloka'i. However, Moloka'i Ranch has plans to re-open Kaluako'i Resort, although plans at this time do not estimate the number of visitor units. Further, the cruise ship industry continues to grow throughout the islands and while Moloka'i has resisted allowing cruise ships to dock in Kaunakakai, Moloka'i is still influenced by the increasing numbers of travelers that travel by cruise ship yet island hop as well. For Moloka'i, approximately 2,852 people visited the island while part of a cruise ship package, which increased 162% to 7,480 people in 2003.

### 2.1.2 AQUACULTURE & AGRICULTURE

Since Moloka'i, from a native Hawaiian standpoint was historically an affluent community with an abundance of coastal resources and boasting the most fishponds in the



*Hālawā Valley, East Moloka'i*



*Moloka'i Ranch, Beach Lodge Villa in Kaupōa, West Moloka'i*



*Aquaculture cages used to grow long ogo on Moloka'i (Photo by UA Environmental Research)*

<sup>2</sup> 2003 State of Hawai'i Data Book, Table 7.06 Average Daily Visitor Census, By Counties and Islands: 2001 and 2002





islands, some propose that aquaculture can become a growing market for Moloka'i. Tiger shrimp are already exported to O'ahu restaurants and hotels, but the emerging export market is tropical fish. The U.S mainland imports more than \$10 million of tropical fish annually from Indonesia and other Far East locations, some believe that Moloka'i's domestic tropical fish will be well received in U.S. markets.

As for agriculture, according the Hawai'i Data Book, Moloka'i produces 75-85% of Hawai'i's sweet potatoes and offers a unique opportunity as an island because it remains isolated from many of the viruses and diseases affecting crops on other Hawaiian islands. Moloka'i's lettuce and alfalfa are being produced for export, as well as taro and long ogo, a crunchy gourmet seaweed used in relishes, salsa, and namasu. Additionally, Moloka'i's onions, tomatoes, and coffee will continue to show up on grocery shelves throughout Hawai'i for years to come. Papaya and mangos have also become popular crops on Moloka'i. Moloka'i is particularly suitable for growing organic papayas.

### 2.1.3 HOUSING

Regarding housing, Moloka'i is feeling a bit of the real estate boom taking place statewide. Almost daily there are articles about housing prices rising throughout the Islands. A May 10, 2004 article from the Pacific Business News (PBN) mentions that, *"The demand for homes on Maui has spilled over to Moloka'i, according to Paul Harris of Harris Co. consulting group. More Realtors are taking clients to Moloka'i to look at less-expensive lots and homes."* A recent home sale on Moloka'i in April 2004 was for \$147,000; meanwhile anecdotal accounts of rising house prices are abundant.

The median home price on the island is approximately \$130,000 with approximately 61.1% of these homes being owner-occupied. As for the housing trends for DHHL Homesteads, approximately 86% of total existing homes are at least 15 year old, with 41% over 45 years old. Approximately 8% of DHHL homes lack a complete kitchen, 4.4% lack complete plumbing, and 6% with no telephone service.

## 2.2 OVERVIEW OF BENEFICIARIES

Beneficiaries must be 18 years of age and must have a blood quantum of at least 50 % Hawaiian in order to be eligible for a Hawaiian homestead. Beneficiaries may apply for one of three lease types: Residential, Agriculture, Pastoral; or a combination of Residential with either Agriculture or Pastoral. Beneficiaries may not apply for all three types of leases.



Harvest of long ogo (Photo by UA Environmental Research)

### MOLOKA'I HOUSING TRENDS

- Median price for a home \$137,000
- 61.1% of homes are owner-occupied
- 41% of DHHL homes on Moloka'i are over 45 years old



Residence on DHHL lands in Kapa'akea





The 2004 Department of Hawaiian Home Lands Annual Report indicates that 835 leases have been awarded on Moloka'i. Agricultural and residential leases, which compose the majority of the awards, are concentrated in Ho'olehua and Kalama'ula. Residential leases are primarily split between Ho'olehua and Kalama'ula with 153 and 160 leases respectively. An additional 74 residential leases are for the Kapa'akea and One Ali'i area. Composing the majority of awarded lands on Moloka'i, approximately 347 (82%) of all 421 agriculture leases on the island are located in Ho'olehua with the remainder in Kalama'ula. Additionally, 21 of the 27 pastoral leases are also situated in Ho'olehua with 3 leases in Kapa'akea and 3 in Kalama'ula. The location and types of awards are summarized in the table to the right.

According to the 2004 DHHL Annual Report, there were a total of 1,325 new homestead applications submitted to the department. Of this statewide total, 37 applications were submitted for the island of Moloka'i that included 19 new homestead applications submitted for a residential homestead, 14 for an agriculture homestead, and 4 applications for a pastoral lot.

### 2.2.1 BENEFICIARY PREFERENCES

In September 2004, a beneficiary survey was conducted to gather information about beneficiary preferences. Some of the findings are summarized below.

***Residential is the preferred award type*** – Since beneficiaries may apply for more than one type of award, applicants were asked in a survey about their preferred award type. While agriculture applications make up the largest type of applications, when asked for their first choice of award, 68% of beneficiaries expressed a residential award preference (Figure 2.1).

***Agricultural & pastoral applicants want to live on their homesteads*** – Agricultural and pastoral applicants overwhelmingly reported that they wanted to live on their homesteads. This preference would require infrastructure improvements which significantly increases the cost of development. No agricultural or pastoral applicants plan to solely use their land for farming or ranching.

***Existing agricultural lessees have barriers to farming*** – About half of the existing agricultural lessees are either not farming or only growing a few plants or trees. The main reasons cited are lack of equipment, need for training, lack of water, and inability to afford the costs of farming. Most agricultural applicants and lessees want to do some level of subsistence farming.

## **EXISTING HOMESTEADS**

**Total - 835 Leases**

### **Residential Homesteads**

- Kalama'ula - 160
- Ho'olehua - 153
- Kapa'akea - 45
- One Ali'i - 29

### **Agriculture Homesteads**

- Ho'olehua - 347
- Kalama'ula - 74

### **Pastoral Homesteads**

- Ho'olehua - 21
- Kalama'ula - 3
- Kapa'akea - 3

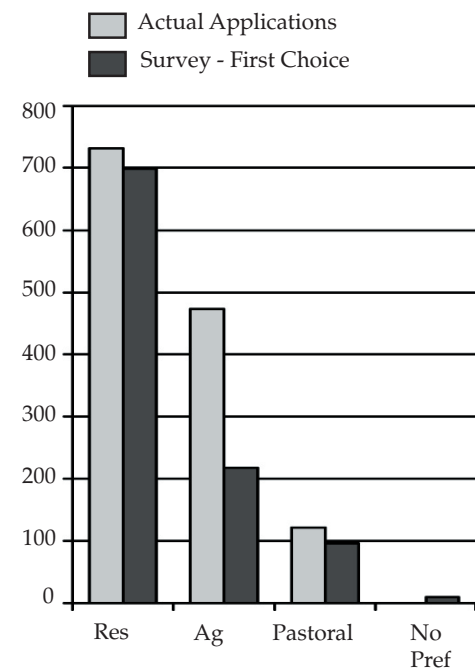


Figure 2.1 - Award Type Preferences







**Preference is for small agriculture lots** – Most agriculture applicants, whether they plan to farm at a subsistence or supplemental level, prefer a lot that is 3 to 5 acres. Most applicants are interested in having land for small-scale agriculture operations or home gardens.

**Award location preference** - The survey revealed that most applicants have no preference regarding location of award. Those who did indicate a preference want to live in either Ho'olehua-Pālā'au or Kalama'ula (Figure 2.2).

**Finances are a barrier for Applicants** – Data from the survey suggests that relatively large numbers of current applicants may not have the level of financial resources to qualify for standard home financing. Common barriers are households with no adults employed, low combined household incomes, and existing low rent/shelter payments

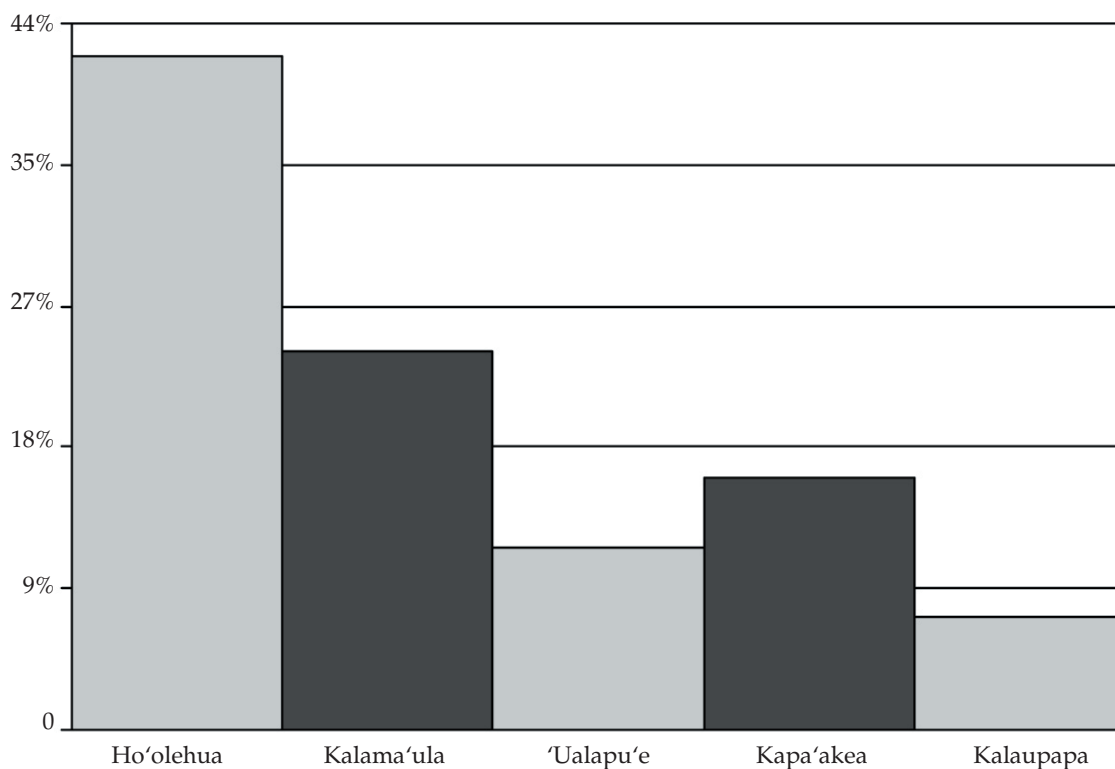
**Lessees are happy with their communities** – When asked to describe what they like about their homestead community two common themes emerged. Leaseholders appreciate the spacious setting of their homestead lots and they enjoy their neighbor's friendliness and 'ohana spirit.

**Homestead communities need infrastructure improvements** – When asked what improvements they would like to see in their homestead community, the lessees overwhelmingly cited

## MOLOKA'I HOMESTEAD LAND USES SUMMARY

Total - 835 Leases

TYPE OF USE	# OF LEASES	ACRES
Residential	387	673
Agricultural	421	8,212
Pastoral	27	923
Community Use	-	219
<b>TOTAL</b>	<b>835</b>	<b>10,227</b>



Information reflects applicants' top two preferences in a 2004 survey.

Figure 2.2 - Residential Homestead Preferences





infrastructure issues. There is a desire to clean out abandoned vehicles, clear vacant lots, improve and maintain roads, and develop more recreational activities.

### 2.3 LAND USE DESIGNATIONS

The DHHL General Plan provides 10 possible land use designations for Hawaiian Home Lands. *Table 2.1* describes the intent of these land use designations, the lot sizes, and minimum infrastructure requirements while *Table 2.2* summarizes where these land uses are planned on Moloka'i. Certain key planning concepts or themes have directed when and where to designate each of the ten DHHL land uses, which include:

- Creating full-service communities;
- Using the ahupua'a concept where feasible;
- Identifying income generating opportunities;
- Designating General Agriculture areas for hui and individual entrepreneurs to lease and develop;
- Designating Special Districts for special areas to create a Hawaiian sense of place; and
- Preserving and enhancing the use and management of water rights and resources.

#### **DHHL LAND USE DESIGNATIONS**

- Residential
- Subsistence Agriculture
- Supplemental Agriculture
- Pastoral
- General Agriculture
- Special District
- Community Use
- Conservation
- Commercial
- Industrial

SETTING/INTENT PURPOSE		LOT SIZE	MINIMUM INFRASTRUCTURE
<b>Residential (Homestead)</b>	Residential subdivisions built to County standards in areas close to existing infrastructure	≤ 1 acre	County Standards
<b>Subsistence Agriculture (Homestead)</b>	Small lot agriculture. Lifestyle areas intended to allow for home consumption of agricultural products. Occupancy optional.	≤ 5 acres	Water (catchment or potable or surface) Road access
<b>Supplemental Agricultural (Homestead)</b>	Large lot agriculture. Intended to provide opportunities for agricultural production for supplemental income & home use. Occupancy optional. Farm plan & 2/3 cultivation required.	≤ 40 acres	Water (catchment or surface) Road access
<b>Pastoral (Homestead)</b>	Large lot agriculture specifically for pastoral uses. Occupancy optional. Ranch plan & fencing required.	≤ 1,000 acres	Road access & livestock drinking water
<b>General Agriculture</b>	Intensive or extensive farming or ranching allowed. Uses subject to HRS Chapter 205. May serve as an interim use until opportunities for higher & better uses become available.	TBD	N/A
<b>Special District</b>	Areas requiring special attention because of unusual opportunities and/or constraints. e.g. natural hazard areas, open spaces, raw lands far from infrastructure (difficult to improve), mixed use areas, green-ways	TBD	To be determined (TBD)
<b>Community Use</b>	Common areas for community uses. Includes space for parks & recreation, cultural activities, CBED, & other public amenities	TBD (see standards)	County standards
<b>Conservation</b>	e.g. watersheds, endangered species, sensitive historic & cultural sites	TBD	N/A
<b>Commercial</b>	e.g. retail, business and commercial activities	TBD (see standards)	County standards
<b>Industrial</b>	e.g. processing, construction, manufacturing, transportation, wholesale and warehousing	TBD	County standards

Table 2.1 - DHHL Land Use Designations





Land Use Designation	'Ualapu'e (Acres)	Kapa'akea, Makakupa'ia, Kamiloloa (Acres)	Kalama'ula, Pālā'au (Acres)	Kalaupapa, Pālā'au (Acres)	Ho'olehua (Acres)	Total (Acres)
Residential	25	264	398	0	55	742
Subsistence Agriculture	0	0	213	0	2,138	2,350
Supplemental Agriculture	0	0	0	0	5,862	5,862
Pastoral	0	465	539	0	923	1,927
General Agriculture	299	2,165	2,353	0	3,681	8,498
Special District	85	2,247	1,719	847	660	5,558
Community Use	3	61	83	14	73	234
Conservation	0	0	0	609	46	655
Commercial	0	0	13	4	40	58
Industrial	0	16	0	0	0	16
<b>TOTALS</b>	<b>412</b>	<b>5,218</b>	<b>5,318</b>	<b>1,474</b>	<b>13,478</b>	<b>25,899</b>

Table 2.2 - Summary of Existing and Proposed Land Use Designations

These themes are discussed throughout the MIP as they relate to specific land use designations and planning issues.

### 2.3.1 RESIDENTIAL HOMESTEADS

Residential homesteads are one of the priority land use designations in the MIP. Proposed residential development will be designed and constructed to county standards.

A total of 742 acres are designated Residential in the MIP. The 327 proposed residential homestead lots would be located in 'Ualapu'e, Kapa'akea, and Kalama'ula.

The emphasis will be on completing holistic master-planned, vibrant and healthy communities, rather than a simple provision of houses with no adequate auxiliary support services such as parks, schools, and community centers.

### 2.3.2 AGRICULTURE HOMESTEADS

Under agricultural homesteads, there are two land use designations: Subsistence or small agriculture lots that are less than 5 acres; and Supplemental or large agriculture lots that are between 5 and 40 acres. Although development costs are high, sustaining the existing and anticipated future needs of agricultural homesteads is a priority of the MIP.



*Supplemental Agriculture lands in Ho'olehua*







As the only DHHL area with a dedicated irrigation water system, Ho'olehua has some of the best agricultural lands in the State. The typical large lot size of 40 acres, excellent soil quality and drainage, fairly even topography, and access to irrigation water via the MIS system are some of the assets of this area. Additionally, there is a farm supply cooperative; a community college training farm; and a UH Extension Research and Demonstration Farm and technical support services on the island, providing resources to an island community that is supportive of agriculture as the primary economic engine.

Subsistence agriculture homestead areas are proposed on 2,350 acres in Ho'olehua and Kalama'ula. Portions of these lands are considered for limited subdivision, which is further discussed in section 7.0 of this report. Further, there are 5,862 acres that are situated in Ho'olehua proposed for supplemental agriculture and would remain as the primary region for continued agricultural activity and growth within the island.

### 2.3.3 PASTORAL HOMESTEADS

Pastoral homesteads are not as high a priority as agriculture and residential homesteads in the MIP. Nearly 1,927 acres have been designated as pastoral and are situated within Kapa'akea, Kalama'ula, and Ho'olehua areas. Development costs per lot for pastoral homesteads are the most expensive of the homestead options.

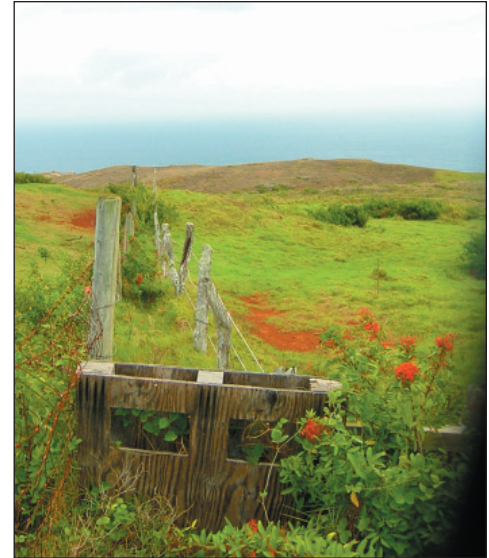
However, it is envisioned that the Moloka'i Slaughterhouse Project, which is managed by the Moloka'i Livestock Cooperative under the Moloka'i Rural Development Program, will be an asset to those beneficiaries with pastoral leases to help bolster the ranching and livestock community while promoting economic diversification on the island.

### 2.3.4 GENERAL AGRICULTURE

Land designated General Agriculture can be leased for farming to generate income for the Department. This designation is also used as an interim designation until higher and better uses become available.

Most of DHHL lands on Moloka'i land (8,498 acres or 33%) is designated as General Agriculture. Only the Kalaupapa and Pālā'au tracts do not have land in this category.

Much of the land in this category is unsuitable for homestead development because of the steep topography or because of difficult access and the high cost of development. However, beneficiaries and others are encouraged to prepare land use plans and apply to use these areas for agriculture and pastoral uses under permits, licenses, or general leases. Further, other viable activities for these lands does include the development



*Pastoral lands in Ho'olehua*



*General Agricultural lands in Kalama'ula*





of cooperative farming for purposes of promoting commercial agriculture among participating Native Hawaiians.

### 2.3.5 SPECIAL DISTRICT

The Special District designation is for land with special opportunities such as natural, cultural or historic resources or severe constraints such as flood control or endangered species. This category is applied to environmentally or culturally sensitive land that requires some conservation principles but can also be used for compatible activities if managed correctly. Ideally, native Hawaiian beneficiaries will oversee these lands and use them to create a Hawaiian sense of place for all beneficiaries living on Moloka'i.

DHHL lands totaling 5,558 acres (22% of the island total) are designated Special District in 'Ualapu'e, Kapa'akea, Kalama'ula, Kalaupapa, and Ho'olehua. This designation protects special areas while making them available for certain justified uses.

The Special District areas are significant for the entire island, not just the parcel in which they are located. For example, in Kalama'ula, the identified wetland area can serve as a natural drainageway for flood control and as a wildlife habitat refuge.

Special Districts play a role, as well, for the ahupua'a. Often special district areas will provide the corridor for pathways or linkages between the mountain and ocean resources. In some cases the Special District designation protects water sources such as irrigation ditches and other special features.

### 2.3.6 COMMUNITY USE

The Community Use land use designation includes a variety of community uses such as parks and open spaces, cultural centers, Community Business Economic Development (CBED) projects, schools, camping areas, meeting pavilions, social service centers, cemeteries, and other amenities. Commercial activities not intended as income generation tools for DHHL are generally designated Community Use. Such current activities include the Lanikeha Community Kitchen, which is managed by the Moloka'i Community Services Council, for purposes of providing a fully equipped commercial kitchen for convenient food preparation for large party events and entrepreneurs interested in developing a product.

Community Use areas totaling 234 acres are designated in 'Ualapu'e, Kapa'akea, Kalama'ula, Kalaupapa, and Ho'olehua. A distinction is made throughout the plan between community uses related to a residential area such as a school or park and more regional community uses such as the social service centers proposed in Kalama'ula.



*Native ecosystem within Kamakou Preserve that is adjacent to Special District area of Makakupa'ia*



*Community Use lands at One Ali'i Fishpond in Kamiloloa*



*Community Use lands at "Church Row" in Kalama'ula*







### 2.3.7 CONSERVATION

Conservation areas are designated in Kalaupapa and Ho'olehua to be consistent with State Land Use Designations. The Conservation area totals 655 acres. Conservation areas protect the resources of the ahupua'a including water resources.

### 2.3.8 COMMERCIAL AND INDUSTRIAL

Commercial and Industrial designations are both income generating uses for the Department. The lease revenues can be used to fund homestead development. Limited Commercial uses are designated in Kalama'ula, Pālā'au, and Ho'olehua. Further, an existing quarry in Kapa'akea is designated as Industrial. These land use types comprise 74 acres and represent 0.28% of all DHHL lands on Moloka'i and thereby comply with the DHHL General Plan requirement that stipulates that not more than 1% of the Department's land statewide should be used for these purposes.

## 2.4 INFRASTRUCTURE COST ESTIMATES

The MIP provides rough order of magnitude costs for each land use designation. Infrastructure costs include a breakdown between on-site and off-site costs. All costs are considered on-site improvements except for sewage treatment plants, wells, water storage facilities, drainage improvements, and intersection improvements (*Table 2.3*).

All residential homestead cost estimates are based on County standards and provide infrastructure for beneficiaries to live on lots. The estimates for agricultural and pastoral costs also are based on County rural standards. Costs include potable water, waste water treatment, roads, site preparation, and electricity. Irrigation costs are not included because this cost is difficult to determine since it depends on the future of implementing varying agricultural strategies for different crop type initiatives on Moloka'i and the necessity to improve and perhaps expand the existing irrigation water system.

It should be noted that water demand needs for Commercial and Community Use are included in the overall water demand calculations for a specific area. However, no estimates are provided for General Agriculture, Special District, or Conservation. The cost estimates are conservative figures and there may be opportunities to reduce infrastructure costs. The Department could work with the County or private developers to share the expense of building costly off-site improvements such as sewage treatment plants. Furthermore, Agriculture and Pastoral costs could be minimized by reducing the infrastructure provided to only gravel roads and potable water.



U.S. Post Office (Commercial) in Ho'olehua

### INFRASTRUCTURE COST ESTIMATE CRITERIA

- Costs are preliminary estimates based upon known infrastructure factors
- Based upon County of Maui Rural Standards
- Irrigation water costs are not included in calculations
- Potable water demand for Commercial and Community Use lands are included in overall water demand for each area





LAND USE	INFRASTRUCTURE
Residential (Homestead)	Potable water, wastewater, roads, site prep, drainage, electricity
Agriculture & Pastoral (Homestead)	Potable water, irrigation service, improvements for areas connected to existing MIS, wastewater, rural roads, site preparation, electricity
General Agriculture	None
Special District	None
Community Use	Water storage
Conservation	None
Commercial	Water storage, sewage treatment
Industrial	Water, wastewater, roads, electricity

**Table 2.3 - Infrastructure Improvements Included in Cost Estimates**



Section 3.0

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‘Ualapu’e







## 3.0 'UALAPU'E

### 3.1 EXISTING CONDITIONS

The Department owns 412 acres in 'Ualapu'e, which is located on the eastern end of the island. As part of a 1994 settlement that awarded DHHL approximately 16,500 acres statewide, the Department was deeded over the lands of 'Ualapu'e. However, the land transfer did not occur until 1999.

The parcel lies mauka of Kamehameha V Highway and is highlighted by its sloped terrain (11-20%) from its mountainous regions interspersed by the deep ravines of Kahananui Gulch, Ki'inohu Gulch, and Mo'omuku Gulch (*Figure 3.1*). Pockets of residences dot the coastal area adjacent to the parcel. The coastal area in this region is primarily comprised of traditional fishponds some of which remain in use today. Kilohana Elementary school and the Kilohana Community Center are the only community facilities near the parcel.

The elevation ranges from 25 to 1,000 feet above sea level. The lower elevations receive 35 inches of rain per year while the upper elevations receive 45 inches per year. The parcel is characterized as undeveloped with an existing revocable permit.

The 'Ualapu'e lands are primarily located within the Agriculture State Land Use designation except for its upper mauka boundary which abuts the Conservation district and its lower boundary that is adjacent to an Urban-designated area.

### 3.2 OPPORTUNITIES AND CONSTRAINTS

The major factors influencing possible land uses in 'Ualapu'e are summarized below.

*Topography & Soils* – Impressive views are available from the high and cool elevations. However, the steep isolated plateaus and valleys that predominate in 'Ualapu'e make development challenging and increase costs. Soil is poorly drained over soft weathered rock and characterized as agriculturally unproductive.

*Limited Residential Land* – The area of the parcel between the 20 to the 80 foot elevation is a gentle slope with good scenic views that makes this portion a good site for residential development.

*Limited Road Access* – Access to the property is provided along Kamehameha V Highway, which is a two-lane divided highway. Within the undeveloped 'Ualapu'e parcel, a single mauka unimproved paved roadway access extends from Kamehameha V Highway. Any future development of the area will require substantial roadway improvements.

#### EXISTING USES

- No homesteads
- 2.1 acres under license to Ka Hale Pōmaika'i
- Several cultural sites within parcel
- Small neighborhoods, cemetery, school, and community center are adjacent to the parcel



County DWS Water Tank above 'Ualapu'e

#### COMMUNITY VOICE

" 'Ualapu'e is a special place... planning for this area should consider the ahupua'a as one working system from mauka to makai..."



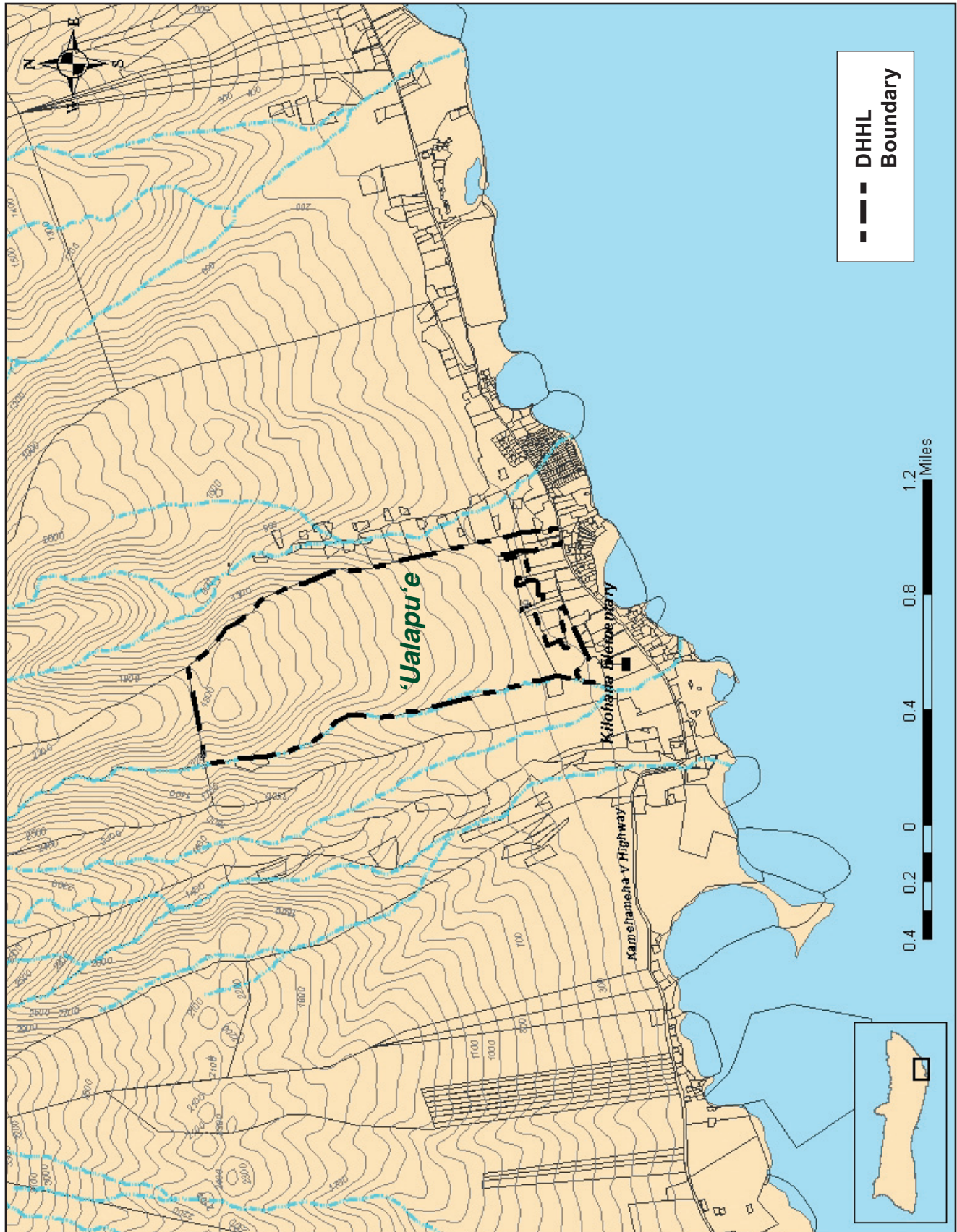


Figure 3.1 - DHHL Parcel in 'Ualapu'e





### 3.4 LAND USE PLAN

Figure 3.2 illustrates the proposed uses for this expansive property. The land uses are also summarized in the table to the right.

Development in 'Ualapu'e will be centered on residential homesteads and community uses in the lower mauka areas to take advantage of existing topography, road, and utility access to the area.

Approximately 85 acres of the upper mauka portions and the Kalauonākukui Heiau are designated as Special District. The scenic upper mauka area will serve a dual role as a natural resource management area as this area is home to several endangered and/or threatened flora species.

This upland region will also be designated as a subsistence forest area as it was identified by the community as an area utilized for gathering forest and stream resources for cultural and subsistence practices.

The Special District designation for Kalauonākukui Heiau will preserve this important cultural resource and the integrity of its cultural space as well as create opportunities for groups to engage with this wahi pana (traditional sacred site) for educational purposes and create linkages with the coastal cultural resources such as 'Ualapu'e Fishpond.

Vehicular and trail accesses between the Special Districts and residential area will be maintained and improved via existing 4-wheel drive roads and hiking trails.

Most of 'Ualapu'e will remain in General Agriculture to preserve it for future uses. Potential interim uses include agriculture or limited pastoral activities. The overall cost to develop 'Ualapu'e is estimated to be \$4.1 million (Table 3.1)

Major infrastructure improvements include water storage facilities, individual wastewater systems, and road improvements. 'Ualapu'e is identified as a high priority development area. Priorities are discussed further in Section 8.0.

#### 3.4.1 RESIDENTIAL

The 'Ualapu'e residential community is the first of two priority residential developments outlined in Section 8.0. Although the opportunities for developing the land for residential use are constrained by existing natural conditions, the proposed community development will provide (74) 10,000 sq. ft. residential lots on 25 acres. The development of the residential growth within 'Ualapu'e will be planned communities that are designed and implemented in two separate phases. Phase 1 will consist of developing the east end and provide (27) 10,000 sq.

#### LAND USE PLAN

##### Residential

- (27) 10,000 sq ft residential lots on 9 acres - East
- (47) 10,000 sq ft residential lots on 16 acres - West

##### Community Use

- 2.9 acres

##### Special District Areas

- 'Ualapu'e Natural Resource Management and Subsistence Access Area (78 acres)
- Kalauonākukui Heiau CRM Area (7 acres)

##### General Agriculture

- 299 acres
- ~30 acres suitable for future development with infrastructure improvements

	Cost (Millions)
On-Site	\$3.3
Off-Site	\$0.8
<b>TOTAL</b>	<b>\$4.1M</b>

Table 3.1 - 'Ualapu'e Total Infrastructure Costs





*Water* – The parcel is currently not serviced. However, 'Ualapu'e is within the region currently serviced by the Maui County DWS system. The water district sub-areas under the DWS include Kawela-Kaunakakai, 'Ualapu'e, Kala'e, and Hālawā. The two County well sources in 'Ualapu'e provide a source supply of .18 mgd that stems from an estimated 2.5 mgd available source in the 'Ualapu'e Aquifer. Other user groups utilize an additional .44 mgd from the 'Ualapu'e Aquifer. The proposed DHHL development in 'Ualapu'e discussed below would demand an estimated .049 mgd of potable water for residential use. With an adequate potable source, project development would require coordination with DWS to consider future expansion of county source storage and transmission to the area.

*Wastewater* – It is not feasible to connect to the County wastewater system situated in Kaunakakai Town. The total lots within each of the two distinct planned residential areas allow for the use of an Individual Wastewater System (IWS).

*Cultural Resources* – Cultural sites within the parcel such as the Kalauonākukui heiau should be protected and integrated with the protection and restoration efforts of 'Ualapu'e fishpond.

### 3.3 COMMUNITY CONCERNS

In addition to the community meetings that were held at Kulana 'Ōiwi and the Lanikeha Community Centers through the process, an additional meeting was held in 'Ualapu'e at the Kilohana Community Center in November 2004. Some of the key concerns expressed at this meeting and subsequent meetings regarding the proposed alternatives included the following:

- The east end of Moloka'i is becoming highly visible as a potential area for high-end development. If development were to occur in 'Ualapu'e, assurances need to be made that the land is not sold to non-Hawaiians.
- This area has many cultural sites of great importance.
- The mauka areas of the DHHL parcel in 'Ualapu'e and its flora, fauna, and historical/cultural resources need to be preserved for future generations.
- Allowances should be made for subsistence hunting in the upland regions.
- The area needs an additional park or recreational space.
- No commercial use is desired.
- Lands should be reserved for a cemetery.
- First choice for awards should go to East Moloka'i people on the DHHL waiting list.

## Planning Considerations

### OPPORTUNITIES

- Great views and cool temperatures at high elevations
- Suitable land for limited residential development
- Access to sufficient potable water source
- Important cultural sites

### CONSTRAINTS

- Mostly steep, mountainous terrain and isolated valleys
- No existing wastewater infrastructure for future development
- Road access limited to unimproved dirt roads
- Potential for drainage problems



*Mauka region of 'Ualapu'e*



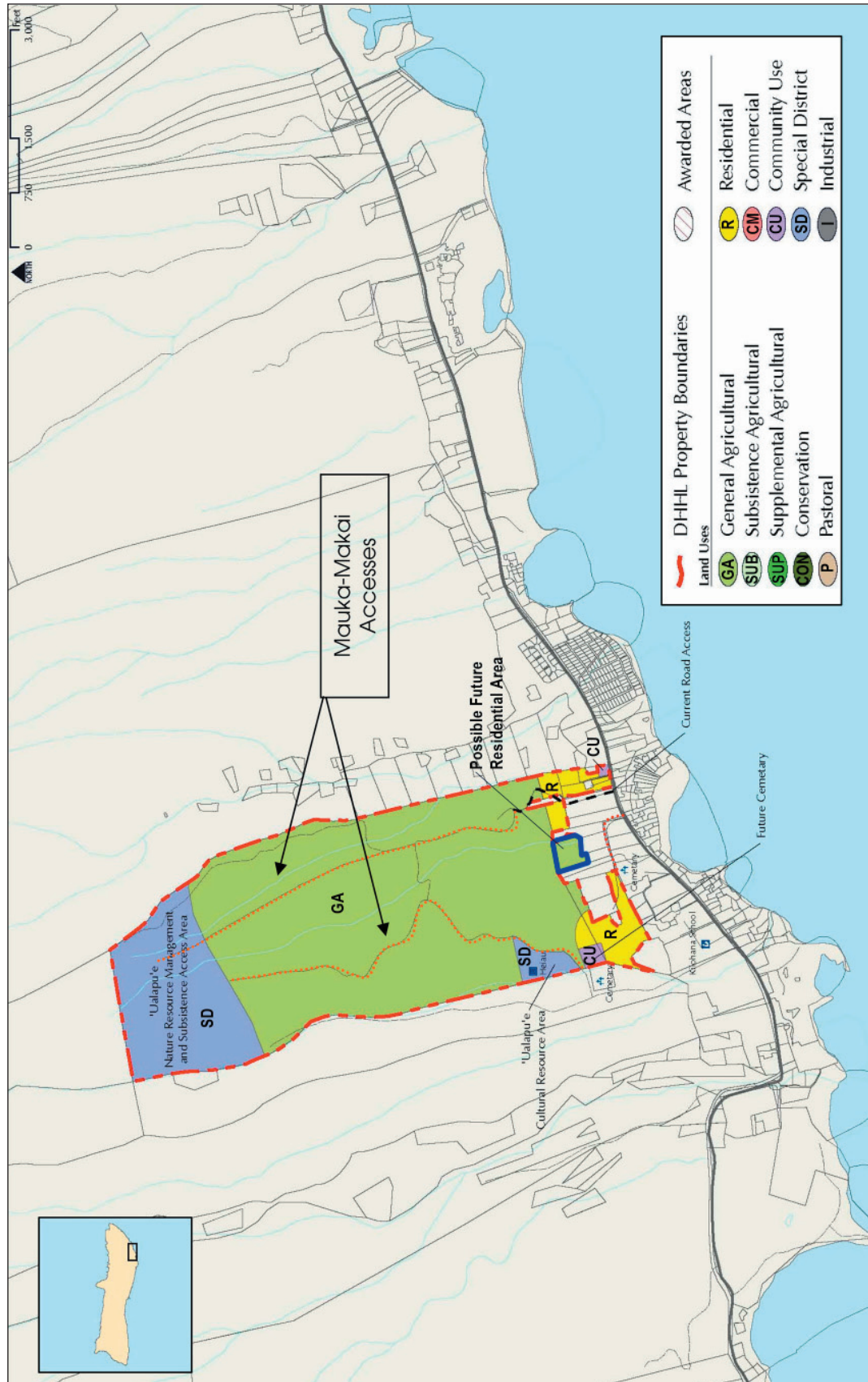


Figure 3.2 - 'Ualapu'e Preferred Land Use Plan





ft. lots on 9 acres. Phase 2 will commence after the completion of Phase 1 and will consist of (47) 10,000 sq. ft. lots on 16 acres along the west end.

The 10,000 sq. ft. allotment for the residential lots size was not the initial preference of the beneficiaries. Most of the beneficiaries had an expressed a desire of a minimum half-acre to 1-acre. However, this would sharply diminish the number of lots that could be developed, thereby dramatically increasing the cost per lot. The 10,000 sq. ft. lot size would still maintain the rural character of the area, thus providing an opportunity for a new community to grow. The slightly increased density reduces overall infrastructure costs and provides more awards.

The 'Ualapu'e development will be a complete community with provided amenities such as a park, community center, cemetery, and access to upland and coastal cultural and natural resources. Access to the residential community will be provided via Kamehameha V highway and road design may include an interior looped local street. Pedestrian links should be provided between the two separated residential areas.

Table 3.2 summarizes the development costs. As this parcel is undeveloped, the proposed residential development will require potable water storage and transmission, road, drainage and storm water management, electrical utility provisions. In accordance with State regulations, an individual wastewater system (IWS) is a viable option for these two distinct residential developments within the 'Ualapu'e parcel. Connection to an existing and sufficient potable water source will require coordination with the County Department of Water Supply.

### 3.4.2 GENERAL AGRICULTURE

The majority of 'Ualapu'e (299 acres) is designated General Agriculture. This will preserve the land for future uses while making it available to individuals and groups for short-term leases. Much of this land is very rugged and unsuitable for most types of activities and development. Care must be taken to ensure that permitted uses are compatible and do not lead to further erosion of the land.

Approximately 30 acres within the central core of the parcel but currently designated as General Agriculture has preliminary identified as a potential area for an unplanned phase of future residential development that is beyond the 20-year planning framework of this plan. Currently this area is only accessible by 4-wheel drive.

Proposed uses for lands within General Agriculture could include limited opportunities for diversified agricultural or pastoral use; establishing portions of the mauka regions as an extension of the proposed subsistence access for hunting and

### **RESIDENTIAL**

#### **East End**

- (27) 10,000 sq ft residential lots
- 9 acres total

#### **West End**

- (47) 10,000 sq ft residential lots
- 16 acres total

#### **Costs**

- \$54,527 per lot

#### **Community Use**

- 2.9 acres total



*Residences adjacent to DHHL parcel in 'Ualapu'e*







gathering purposes; expanding the proposed cultural resource management area around Kaluaonākukui Heiau. These uses could continue within the General Agriculture designation. Other possible activities include tropical forestry or hiking tours focusing on eco-education or adventuring touring.

In general, no infrastructure improvements are proposed within this area. However, the roads should be maintained in their current condition.

### 3.4.3 SPECIAL DISTRICT AREAS

The area around the upper mauka boundary and Kaluaonākukui Heiau have been designated as Special District. According to historical documents, Kaluaonākukui Heiau is an agricultural heiau that is dedicated to the akua (god), Lono. The heiau has been measured as 125' in length, 85' in width, and 6' in height. The Special District Area for this heiau is comprised of 7 acres and includes a buffer zone that extends out from the physical structure of the heiau to a minimum distance of 100' within the DHHL property. This area outside of the physical boundary is to provide protection but also can be used for the future creation of a cultural resource management (CRM) area that includes the development of a cultural garden to cultivate resource such as the various kinolau (physical manifestations) of Lono that would be appropriate ho'okupu (a tribute to invoke the spiritual mana of the akua within the heiau) that is appropriate to Kaluaonākukui. The CRM area could include a staging area whereby community members that take on the responsibility for the long-term care of the heiau could conduct informal talk-story sessions and formal educational forums for visitors to the area.

The upper mauka area under Special District consists of 78 acres and will serve as a natural resource management and subsistence (NRM-SB) area for the protection of several



*General Agricultural lands in 'Ualapu'e*



*Mauka resource of hapu'u fern for food and fabric*

	POTABLE WATER	WASTE-WATER	SITE PREP & ROADS	DRAINAGE	ELECTRICITY	TOTAL
<b>Major Factors</b>	Transmission lines, cxn to existing source	IWS	Enhance and construct new roads	Assume 5' depth	Transmission lines	
<b>On-Site</b>	\$0.2 M	--	\$1.9 M	\$0.7 M	\$0.5 M	\$3.3 M
<b>Off-Site</b>	\$0.1 M	--	\$0.5 M	--	\$0.1 M	\$0.7 M
<b>TOTAL</b>	<b>\$0.3 M</b>	<b>--</b>	<b>\$2.4 M</b>	<b>\$0.7 M</b>	<b>\$0.6 M</b>	<b>\$4.0 M</b>

Table 3.2 - 'Ualapu'e Infrastructure Costs





endangered or threatened flora species. There are over 40 species whose habitat lies within the upper Moloka'i Forest Reserve. Further this region will also be designated as a subsistence forest area as it was identified by the community as an area currently utilized for gathering forest and stream resources for cultural and subsistence practices. In discussion with community members, the forest area was identified as both a dry and wet forest with distinct transitions in the abundance of species types within each unique ecosystem. Directly mauka of this designated NRM-SB is the East Moloka'i Watershed Partnership (EMWP), whose purpose is to protect and enhance the quality of Hawai'i's rainforest communities. Currently the EMWP works with landowners to manage their respective section of the watershed by protecting the upper forest with a contour fence, reducing goat populations, and establishing a monitoring system to help assess stream flow and the reduction of siltation which both are contributing factors to the integrity of near-shore reef and fishpond ecosystems along the coastline.

The Pelekunu and Kamakou Preserves are two specific areas within the East Moloka'i Watershed that are managed by the Nature Conservancy in collaboration with the State Department of Land and Natural Resources, Division of Forestry and Wildlife. The Kamakou Preserve lies in the upland regions between the 'Ualapu'e and Kapa'akea tracts of DHHL This Preserve is home to a wide variety of native plants including the alani (*Pelea* spp.), the 'ōlapa (*Cheiropendron* spp.), the hapu'u fern (*Cimbotium* spp.), and the 'ōhi'a lehua (*Metrosideros polymorpha*). Further, native birds such as the oloma'o (Moloka'i thrush), the kākāwahie (Moloka'i creeper), and the 'amakihi (endemic Hawaiian honeycreeper) have been sighted within this habitat. Currently, DHHL is not a partner with the EMWP but given the existing partnerships that do exist for watershed protection, it is strongly recommended that the Department apply to the EMWP to become a participating member to facilitate its own natural resource management program.

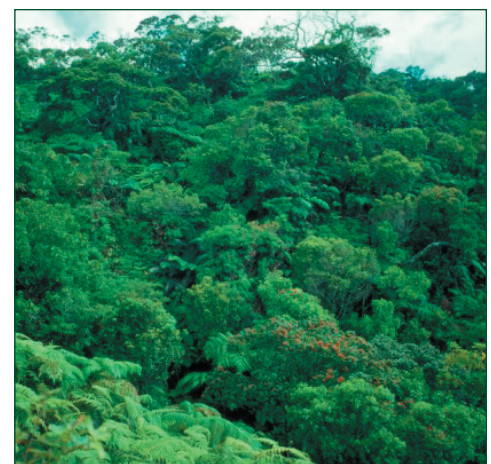
Other appropriate uses that could be considered include utilizing parts of the Reserve Area as a passive recreation area where individuals and community groups can hike to take advantage of the serenity and scenic views. No infrastructure improvements are proposed for the special district areas. However, the existing 4-wheel drive access should be maintained. If specific groups wish to develop programs and facilities in the Special District, additional infrastructure such as hunter stations, water catchment systems, or access trails would need to be evaluated and developed as appropriate to maintain the integrity and quality of the area's natural habitats.



Native 'amakihi (honeycreeper) resting on 'ohi'a lehua branch



Endemic 'olapa on O'ahu (Photo by Charles H. Lamoureux)



'Ohia lehua and fern forest in Pelekunu, Moloka'i







### 3.4.4 COMMUNITY USE

Two areas within 'Ualapu'e have been designated as Community Use. The first Community Use area is comprised of two acres and is designated as a cemetery to serve as the future expansion area of the existing 'Ualapu'e Cemetery. Some grading activity may be required to provide road access and level ground surface. Access to water for landscape irrigation will also be required.

The second Community Use area is deemed for purposes of either a park or a community center. Given the richness of cultural and natural resources that exist and the anticipated growth of a new community, community-based initiatives can be considered in creating opportunities for learning, sharing, and sustaining the needs of the community, creating programs for youth or adult camps or other retreat activities that emphasize the relationships between mauka and makai-based ecosystems and wahi pana. Such activities could be linked with the restoration and use of 'Ualapu'e Fishpond through a partnership between the Department and existing community and cultural organizations that currently mālama the area. It is envisioned that the community center would be the place that much of these activities could be managed in conjunction with providing a meeting space for community functions.



*View along hiking trail in Kamakou Preserve, Moloka'i*



*Entrance to existing 'Ualapu'e Cemetery (Community Use)*





Section 4.0

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Kapa'akea-Kamiloloa-Makakupa'ia







## 4.0 KAPA'AKEA - KAMILOLOA - MAKAKUPA'IA

### 4.1 EXISTING CONDITIONS

The DHHL lands of Kapa'akea, Kamiloloa, and Makakupa'ia are situated along the southern portion of Moloka'i and are approximately 1 mile east of Kaunakakai town. These three ahupua'a parcels are comprised of 5,218 acres.

Most of these DHHL lands are situated mauka of Kamehameha V Highway, highlighted by variable slope (10-35%) and major drainage channels that help form the wetlands near the shoreline (*Figure 4.1*). The slopes are mild and severed with steep rocky areas and gentle sloping agricultural lands. The coastal area in this region is characterized as a flat coastal plain with two existing fishponds fronting its shores, One Ali'i and Kaloko'eli, respectively.

The area has no parks or schools but does have one cemetery. The closest school is Kaunakakai Elementary School which is less than 5 miles away. The elevation ranges from sea level to its mauka boundary at 2,000 feet above sea level. The lower elevations receive 15 inches of rain per year while the upper elevations receive 40 inches per year.

Similar to 'Ualapu'e, the Kapa'akea, Kamiloloa, and Makakupa'ia lands are primarily located within the Agriculture State Land Use designation with its upper slopes within the Conservation district and its lower western section within an Urban-designated area. The fishponds and their surrounding coastal edge are within the Conservation District.

### 4.2 OPPORTUNITIES AND CONSTRAINTS

The discussion below summarizes the major factors influencing possible land uses in Kapa'akea, Kamiloloa, and Makakupa'ia.

*Topography & Soils* – The majority of mauka lands is densely covered with boulders and loose rocks and primarily suitable for pastoral or as a nature reserve. The coastal area is a mixture of sand and silty clay.

*Drainage and Flood* – Surface runoff is a major issue within this area. Residents within Kapa'akea tract experience severe flooding events on an annual basis in the coastal area. Heavy seasonal rainfall contributes to flooding in the areas and proper maintenance and cleaning of the drainage channels is necessary. The US Army Corps of Engineers (USACE) has looked at a diversion ditch mauka of the highway and at improving the drainage channel under Kamehameha V Highway leading into the Kapa'akea makai DHHL neighborhood; however, funds for implementing this flood control project were not allocated.

#### EXISTING USES

- 72 residential leases
- 4 pastoral leases
- Fee simple residential areas situated between boundaries of DHHL lands
- Extensive historical and cultural sites on the east end of parcel
- Existing County cemetery
- Existing cinder quarry

#### COMMUNITY VOICE

*"The homestead of Kapa'akea, Kamiloloa, and Makakupa'ia represents a small but close community of good neighbors where everyone knows each other's families and each values and cares for the resources provided by the nearby ocean..."*



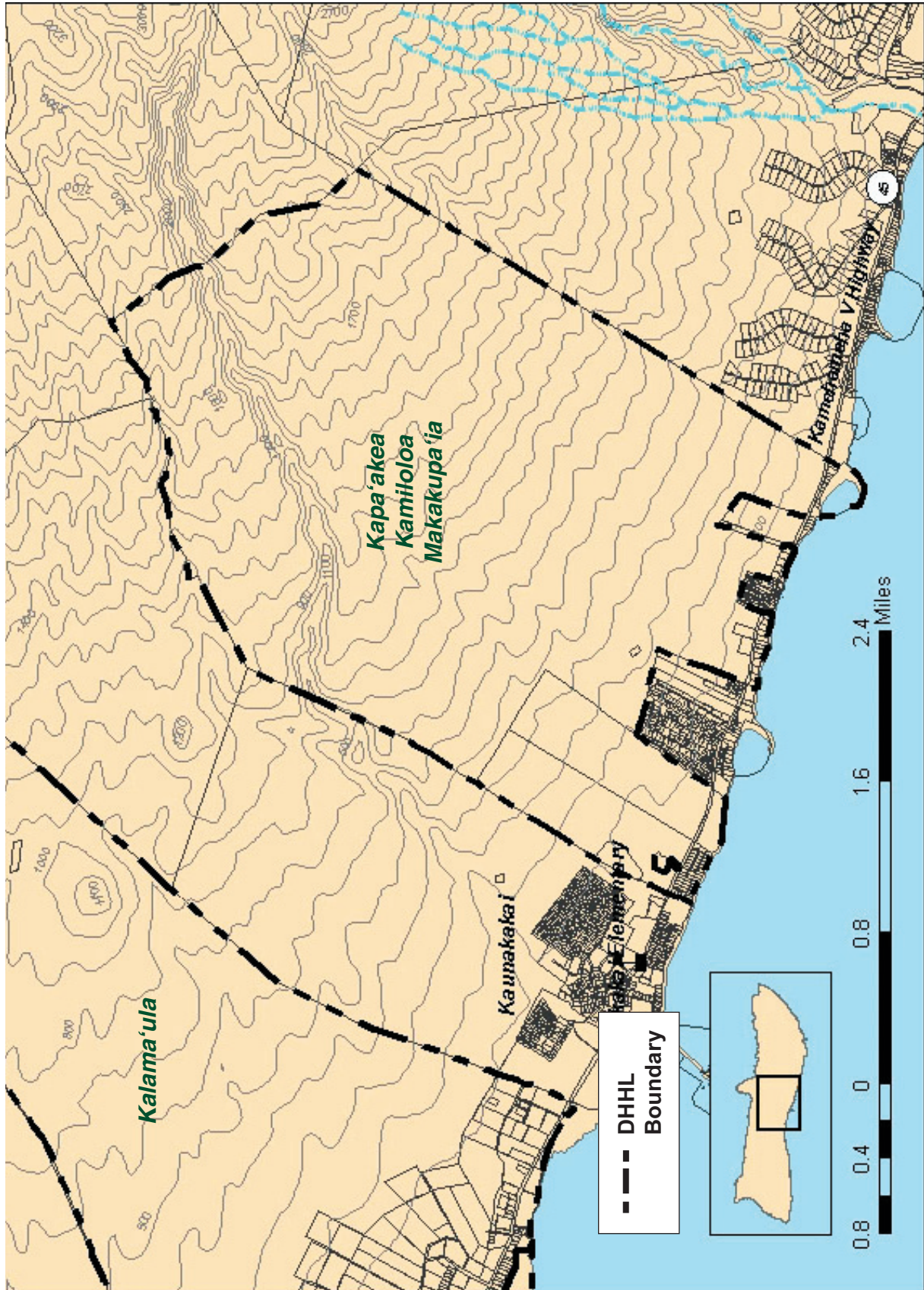


Figure 4.1 - DHHL Parcel in Kapa'akea, Makakupa'ia, Kamiloloa





*Limited Road Access* – Two makai light-duty paved roads provide access points to Kapa'akea off of Kamehameha V Highway that run through the parcels. The local collector street in the homestead is a looped light-duty road which connects to the two access points. An additional unimproved road provides access to the mauka region that leads up to the Kapa'akea Cemetery.

*Water* – The area is currently serviced by the Maui County DWS system with available potable water of approximately .93 mgd. Proposed development discussed below would require .18 mgd. However, if development exceeds the 150' elevation, water transmission would be cost prohibitive as it would require booster tanks.

*Wastewater* – The proposed development of residential units would require the development of onsite wastewater treatment facility.

*Cultural Resources* – Cultural sites within the parcel such as the fishponds and the Habitation and Agricultural Complex within Makakupa'ia should be protected and perpetuated.

### 4.3 COMMUNITY CONCERNS

The areas of Kapa'akea, Kamiloloa, and Makakupa'ia were discussed in all of the main community meetings held on Moloka'i. Additionally, individual group meetings, including one meeting with the homestead associations emphasized some of the key community issues and concerns that included the following:

- Addressing the flooding and drainage issue as the primary concern in coordination with stream rehabilitation.
- A community park or playground for kids of the area is needed.
- Uneven paving of Kapa'akea Loop Road heightens impacts by creating a sloped effect for flood runoff to residences.
- Need to create communities not subdivisions.
- Maintain upland resources and access for subsistence hunting and gathering
- Need to provide for the expansion of existing cemetery.
- Preserve fishponds and consider developing a cultural resource center at these sites.

## Planning Considerations

### OPPORTUNITIES

- Suitable land for limited residential development
- 3 fishponds as important cultural sites and potential community resource for CBED and subsistence activities
- Upland resources for hunting and gathering

### CONSTRAINTS

- Variable slope
- Need new water source
- Flooding and drainage issues
- Residential development would require wastewater treatment facility



*Uneven paving along Kapa'akea Loop Road*





#### 4.4 LAND USE PLAN

An Inventory and Preliminary Analysis Report was conducted for this area in 1982. The purpose of this condensed analysis was to evaluate the existing conditions, summarize then opportunities and constraints, and evaluate the significance of these lands for future residential homesteads. This study was used as a baseline of information as some of the key concerns and issues were still prevalent. *Figure 4.2* illustrates the proposed uses for this expansive property. The land uses are also summarized in the table to the right.

Proposed land use development in the area will be centered on a new residential homestead with support services within Kamiloloa. Other proposed land uses for future consideration include the transformation of the makai portion for community use with a proposed coastal park and restoration of an inland fishpond that currently is an non-managed wetland system as well as provisions for a future cemetery. Plans call for the Makakupa'ia region to become a cultural center that extends mauka to makai.

The upland region is designated as Special District for the purposes of serving as a subsistence forest area as it was identified by the community as an area utilized for hunting and gathering forest and stream resources for cultural and subsistence practices. Links between the Special Districts and Kamehameha V Highway will be provided by 4-wheel drive roads and hiking trails.

The Special District designation within the Kamiloloa area will serve to protect existing historical sites of a traditional habitat and agricultural complex within the region. This CRM area will be programmatically linked with the restoration and care of One Ali'i Fishpond that is situated makai of the CRM area.

Most of the Kapa'akea, Kamiloloa, and Makakupa'ia area will remain in General Agriculture to preserve it for future uses. Potential interim uses include agriculture or limited pastoral activities. Further, the Kapa'akea quarry area is designated as Industrial.

The overall cost to develop Kapa'akea, Makakupa'ia and Kamiloloa is estimated to be \$29.2 million. The off-site and on-site costs are summarized in *Table 4.1* and discussed further in the following sections. Major infrastructure improvements include a new source, storage, and transmission of potable water; individual wastewater systems, and road improvements (*Table 4.2*).

These DHHL lands are identified as a medium priority development area. Priorities are discussed further in Section 8.0 of this document.

#### **LAND USE PLAN**

##### **Existing Residential**

- (74) lots ranging from .3 to 1 acre lots

##### **New Residential**

- (286) 1/2 acre mauka lots on 204 acres
- (5) 1/2 acre makai lots on 4 acres

##### **Pastoral**

- 465 acres

##### **Community Use**

- One Ali'i and Kaloko'eli Fishpond restoration (61 acres)
- Future consideration for community park, cemetery expansion, and inland fishpond restoration (23 acres, not shown)

##### **Special District Areas**

- Natural Resource Management and Subsistence Access Area (2,040 acres)
- CRM Area (207 acres)
- Flood control (29 acres)

##### **General Agriculture**

- 2,165 acres

##### **Industrial**

- 16 acres for existing quarry



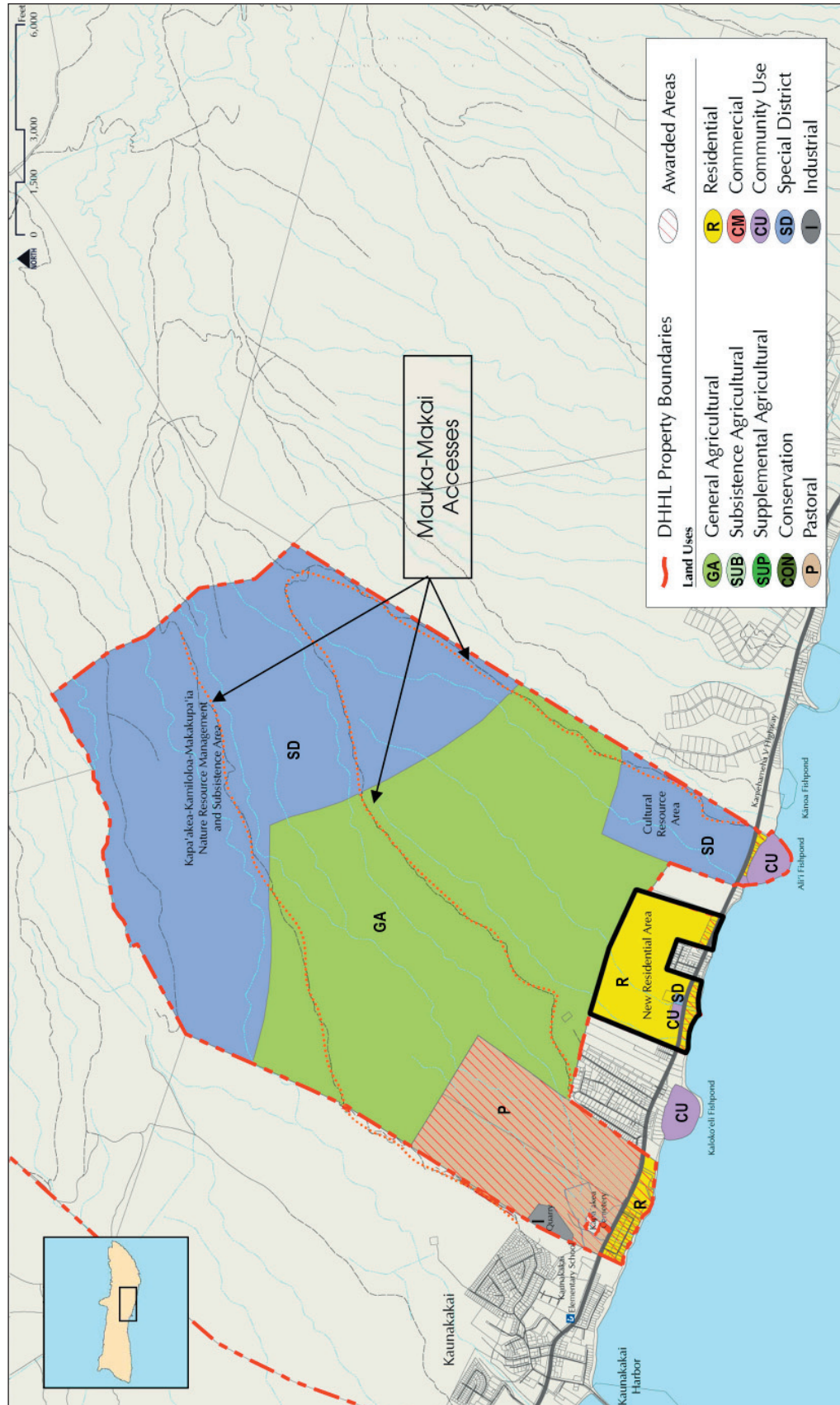


Figure 4.2 - Kapa'akea, Makakupa'ia, Kamiloloa Preferred Land Use Plan





#### 4.4.1 RESIDENTIAL

With a sufficient potable water source from the County DWS systems and suitable land for limited residential development, the second area of emphasis for new residential growth is within the Kapa'akea, Kamiloloa, and Makakupa'ia tract. Currently, there are 72 existing residential leases situated on 60 acres ranging from .3 to one-acre lots. Of these lease, 45 residences are clustered in the coastal homestead of Kapa'akea while the remaining 27 lots are situated along the coastline between Kamiloloa and Makakupa'ia.

The new residential area is comprised of 204 acres situated within the central region of the DHHL parcel and mauka of Kamehameha V Highway and would provide (286) half-acre lots. Existing limitations of the area is that potable water service to the area can only be provided to the 150' elevation level. Any proposed development further mauka would require the provision of booster pump stations and storage tanks which would be cost prohibitive.

According to State regulations, general requirements for wastewater treatment stipulate that any new proposed development of fifty or more single family residential units does not allow for the use of an IWS. As such, infrastructure requirements for the new development area will require a wastewater treatment facility. Residential development within this DHHL tract will fortify and expand a rural community with planned provisions for amenities such as a park, community center, cemetery, and access to upland and coastal cultural and natural resources. Access to the new residential community will be provided via Kamehameha V highway.

Table 4.2 summarizes the development costs. As this parcel is undeveloped, the proposed residential development will require potable water, road, drainage and storm water management, electrical utility provisions. Connection to the existing County potable water source will require coordination with the County Department of Water Supply.

#### 4.4.2 PASTORAL

There are three pastoral leases that currently utilize 465 acres within this DHHL tract. There are no plans for future expansion of pastoral lots within the Kapa'akea, Kamiloloa, and Makakupa'ia area. However, lands that are designated within the General Agriculture areas could be considered for cooperative farming and/or ranching activities.

One of the existing concerns within an existing pastoral lot is the severe flooding and drainage problem that limits its usability. Any future consideration of approximately 29 acres within the existing pastoral lease as a flood control management area will

	Cost (Millions)
On-Site	\$29.2
Off-Site	--
<b>TOTAL</b>	<b>\$29.2 M</b>

Table 4.1 - Kapa'akea, Kamiloloa, Makakupa'ia Total Infrastructure Costs



Residential parcel in Kapa'akea homestead



Undeveloped future site of residential area in Kamiloloa







require coordination and planning between the Department, the existing lessee, and representatives from the U.S. Army Corps of Engineers, Honolulu District.

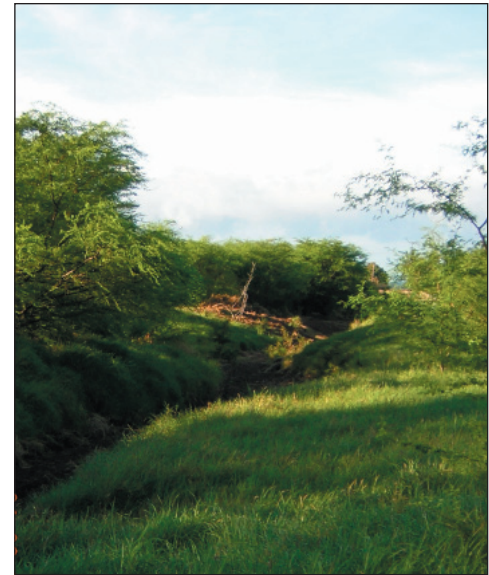
#### 4.4.3 SPECIAL DISTRICT

Along the eastern boundary of the tract and mauka of Kamehameha Highway lies an abundance of historical and cultural resources in an area designated as the Makakupa'ia Habitation and Agricultural Complex. According to data provided by the State Historic Preservation Division, this area is comprised of 207 acres and consists of numerous terraces, retaining walls, stone mounds, modified outcrops, enclosures, and habitation sites that are still intact.

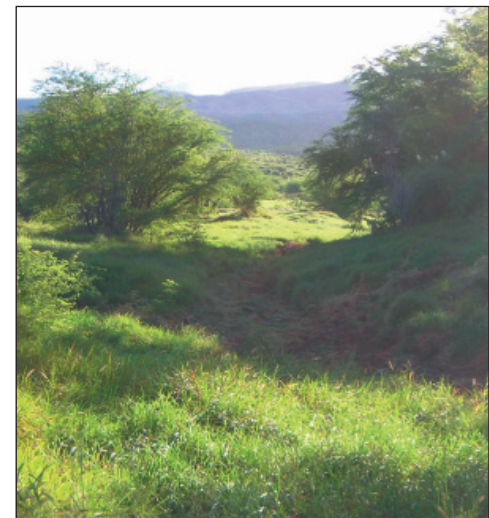
One of the ongoing projects of the Moloka'i Rural Development Program (RDP) is the provision of in-class and field archaeology training for Moloka'i students. This part of a partnership with the Society of Moloka'i Archaeology, the RDP, Kamehameha Schools, the University of Hawai'i Department of Anthropology, the Maui Community College Moloka'i Education Center, and the Enterprise Community. It is recommended that the Department establish a partnership with this existing working group to help plan, implement, and maintain this designated area as a culture resource area and perhaps develop a cultural legacy project whose programs could be linked with the proposed restoration and care of the adjacent One Ali'i Fishpond.

The second Special District area consists of approximately 2,040 acres of the upper mauka boundaries of the Kapa'akea, Makaupa'ia, and Kamiloloa parcels, serving as a Nature Resource Management and Subsistence Area (NRM-SB). This upland area is a natural wildlife habitat for axis deer; feral pigs and goats; and a variety of gamebirds including ring-necked pheasants, chukar, francolins, and quail.

Hunting regulations in a State-designated public hunting area land above the DHHL boundary are currently managed by the State Department of Land and Natural Resources, Forestry and Wildlife Division (DOFAW), which establishes rules pertaining



*Pastoral lands in Kapa'akea homestead*



*Mauka view of existing drainage from Pastoral lands of Kapa'akea to NRM-SB (Special District) mauka lands*

	POTABLE WATER	WASTE-WATER	SITE PREP & ROADS	DRAINAGE	ELECTRICITY	TOTAL
<b>Major Factors</b>	Transmission	Treatment facility	Enhance and construct additional	Assume 5' depth	Transmission lines	
<b>On-Site</b>	\$3.1 M	\$12.5 M	\$9.6 M	\$1.4 M	\$2.6 M	\$29.2 M
<b>Off-Site</b>	--	--	--	--	--	--
<b>TOTAL</b>	<b>\$3.1 M</b>	<b>\$12.5 M</b>	<b>\$9.6 M</b>	<b>\$1.4 M</b>	<b>\$2.6 M</b>	<b>\$29.2 M</b>

Table 4.2 - Kapa'akea, Kamiloloa, Makakupa'ia Infrastructure Costs





to types of hunting allowed in certain areas; daily bag limits; open hunting periods and days; and any special conditions and restrictions.

As with 'Ualapu'e, the proposed DHHL NRM-SB will require future coordination and partnerships with DOFAW officials and other members of the East Moloka'i Watershed Partnership that have an interest in land use activities adjacent to the DHHL boundaries to establish policy guidelines that design best management practices for this area. These practices would be to ensure that wildlife habitats that are home to endangered and threatened species are protected from human and ungulate-related activities. These practices should include an annual count of available game; maintenance and upkeep of access roads; enforcement of hunting regulations; and fire protection; and the upkeep of hunter check-in stations.

One of the key concerns within the Special District and General Agricultural areas is the propensity of wildfires during hot and dry summer months. Wildfires pose the greatest threat on Moloka'i. A Maui Times article describes a 12,000-acre wildfire on Moloka'i in 1998 that cost \$1 million dollars to extinguish. According to the Pacific Disaster Center, wildfire affects Hawai'i and other Pacific Island environments on several levels, in addition to native plant destruction. Wildfires also cause soil erosion, which leads to soil runoff into the ocean, killing seaweed and fish that local populations rely on for food and cultural practices. For example, the island of Moloka'i has experienced three 10,000-acre fires in the past decade on the slopes of mountains that runoff directly to the longest continuous reef in the United States. Since the island experiences high unemployment, many residents rely on shoreline fishing for sustenance. The health of the reef and shoreline areas of Moloka'i and the other islands are impacted after such wildfires.

The County of Maui, Department of Fire Control (DFC) has mutual aid agreements with the State Department of Transportation, Airports Division, Crash Fire Rescue Unit (CFRU) and DLNR-DOFAW. CFRU has historically supported the DFC fighting wildfires on DHHL lands. The DFC in turn has provided both medical and fire response services to airport emergencies. Management of the NRM-SB and General Agriculture areas will also require the development and implementation of a wildfire management and protection program.



*Mauka view from One Ali'i Fishpond (Community Use) of Habitation and Agricultural Complex (Special District) in Makakupa'ia*



*Common example of wildfires that occur in similar dryland areas in Kapa'akea (Photo by Maui County Civil Defense)*



*NOAA-NOS aerial photograph of Kaunakakai used by Maui County Fire Department to plan for wildfire emergencies (Photo by Pacific Disaster Center)*







#### 4.4.4 COMMUNITY USE

Two of the rich cultural resources of the area are One Ali'i Fishpond and Kaloko'eli Fishpond, each comprised of 30 acres and 28 acres, respectively. These fishponds are situated along the eastern coastline of the DHHL parcel and are traditionally known as a loko kuapā, a designed rock enclosure with a makaha (sluice gate) that allows for ocean water to circulate within the pond. The walls of One Ali'i Fishpond measure 2,700' long, 4' wide, and 4.5' high at its prime. As the name suggests, this pond was reserved for the ali'i, or ruling chiefs during traditional times. According to local residents, schools of 'āholehole (Hawaiian flagtail) can still be found within the pond's waters. Kaloko'eli was restored in the 1920s after the walls were destroyed. Each fishpond has two sluice gates to account for seasonal shifts in the tidal patterns. Coconut palms dot the shoreline and mangrove is visible along the shoreline and the edge of both pond walls. The community envisions that these fishponds in collaboration with many others along the south shore of Moloka'i can be restored and managed by local residents for primarily subsistence use and cultural educational tools. Secondary considerations of using the fishpond would include some limited community-oriented economic development or eco-tourism. One of the key issues to restoring historic fishponds has been attaining the necessary permits required under existing statutory and regulatory controls designed to protect the pristine nature of the coastal environment. Past precedence with other fishpond restorations have illustrated that the permitting process can be time consuming and limiting. The Department will need to work with key community interests and the regulatory agencies such as the U.S. Army Corps of Engineers, the State Department of Business, Economic Development, and Tourism, Office of Planning, Coastal Zone Management Program, and the County of Maui Department of Planning. Future development of programs for this fishpond could be linked with the proposed creation of a cultural resource management area of a traditional agricultural and habitation complex located mauka of the Ali'i Fishpond.

An approximately 2-acre site was identified as Community Use within the new mauka residential area. It is anticipated that this site would be a neighborhood park to meet the recreational needs of future and growing community. Although not identified as land uses in Kapa'akea, Kamiloloa, and Makakupa'ia, other important community uses were identified and discussed during the planning process and are subject to a subsequent revision to the proposed MIP. Expansion of existing County cemetery and establishing a community park along the coastal area of the existing Kapa'akea homestead were other community



*Makai view of One Ali'i Fishpond in Makakupa'ia*



*Kaloko'eli Fishpond, Kamiloloa*



*School of 'āholehole (flagtail), a native fish that is found in One Ali'i fishpond (Photo by NPS)*





uses identified. However, the areas within the tract that meet the baseline criteria for these proposed uses occur on lands already leased out for pastoral and residential use. Although the leases that are issued by the Department do have a clause to recall lands for a public purpose, this act would require further consultation with the existing lessee to ensure that mutual benefits are provided to both parties. Finally, during the planning process, a former loko wai (inland fishpond) that currently exists in the form of a grassland marsh was identified on lands currently leased as residential. Potential restoration of this 3-acre parcel was discussed during the planning process but would require a similar level of future coordination and negotiation with the existing lessee.

#### 4.4.5 GENERAL AGRICULTURE

Approximately 2,165 acres of these DHHL lands are designated General Agriculture and the land for future uses while making it available to individuals and groups for short-term leases. Some of these lands could be the site of future homesteads beyond the 20-year planning framework identified in this plan. As with 'Ualapu'e, much of the land in Kapa'akea, Kamiloloa, and Makakupa'ia is very rugged and unsuitable for most types of activities with limited development options. Care must be taken to ensure that permitted uses are compatible and do not lead to further erosion of the land. Proposed uses for this area could include limited opportunities for pastoral use and for providing access for subsistence hunting and gathering. Further needs could also include expanding the CRM area as more sites may be discovered that are need of protection and preservation. No infrastructure improvements are proposed for this area. The roads should be maintained in their current condition.

#### 4.4.6 INDUSTRIAL

According to the State Department of Accounting and General Services, Survey Division, the existing Kapa'akea Quarry site is comprised of approximately 17 acres adjacent to Pu'u Maninikolo and produces cinder block and cinderlite.



*Area under future consideration for wetland and fishpond restoration in existing Residential lands under lease in Kapa'akea*



*Existing County Cemetery in Kapa'akea that may require future expansion on lands in existing Pastoral lease*











## 5.0 KALAMA'ULA

### 5.1 EXISTING CONDITIONS

The DHHL properties in Kalama'ula consist of 5,318 acres, which are located west of Kaunakakai town. This parcel lies mauka of Kamehameha V Highway and is characterized as a gentle slope (0-10%) upland that leads up to Pu'u Luahine (372 ft. elevation) transected with the declining slopes of Kuhuaawi Gulch and Kaluaohē Gulch, located north of the pu'u (Figure 5.1). The area consists of multiple uses with a growing residential community in the lowlands and coastal region, a wetlands to the southwestern corridor, pastoral use permitted to the Moloka'i Homestead Livestock Association; Kapuāiwa Grove, a noted cultural and community resource area fronting the area's shorelines, Church Row; and Kulana 'Ōiwi, a community services center that houses the island branch offices of DHHL, Office of Hawaiian Affairs, and the Queen Lili'uokalani Children's Center.

The elevation ranges from sea level to 1,800 feet above sea level. The lower makai elevations receive 20 inches of rain per year while the upper forested elevations receive 40 inches per year. The Kalama'ula lands are primarily located within the Agricultural State Land Use designation except for its upper mauka boundary which abuts the Conservation district and its lower boundary which includes a Rural-designated area and the wetlands which lie in Conservation District and is comprised of a thick mangrove forest.

### 5.2 OPPORTUNITIES AND CONSTRAINTS

The discussion below summarize the major factors influencing possible land uses in Kalama'ula.

*Topography & Soils* – There are multiple soil types ranging from salty marsh lands to rocky and stony outcrops in the uplands. There is some agricultural potential with the provision of an adequate source of irrigation water.

*Established Community* – The existing residential homestead known as the Kalaniana'ole Colony is the center of the rural community in Kalama'ula that is supported by several social service organizations and churches within the immediate vicinity.

*Drainage and Flooding* – In Kalama'ula, most of the land makai of Maunaloa Highway is subject to flooding. A flood area also extends into the center of the Kalaniana'ole Colony where several runoff streams converge.

#### EXISTING USES

- 161 residential leases
- 76 agriculture leases
- 3 pastoral leases
- Various general lease, licenses, revocable permits to churches, community groups, Moloka'i Homestead Livestock Association
- Provision of social services at Kulana 'Ōiwi

#### COMMUNITY VOICE

*"Kalama'ula is a homestead of friendly and kind neighbors that provides a central and convenient location to other places of work, recreation, and subsistence and addresses the essential needs of Hawaiian families on Moloka'i..."*



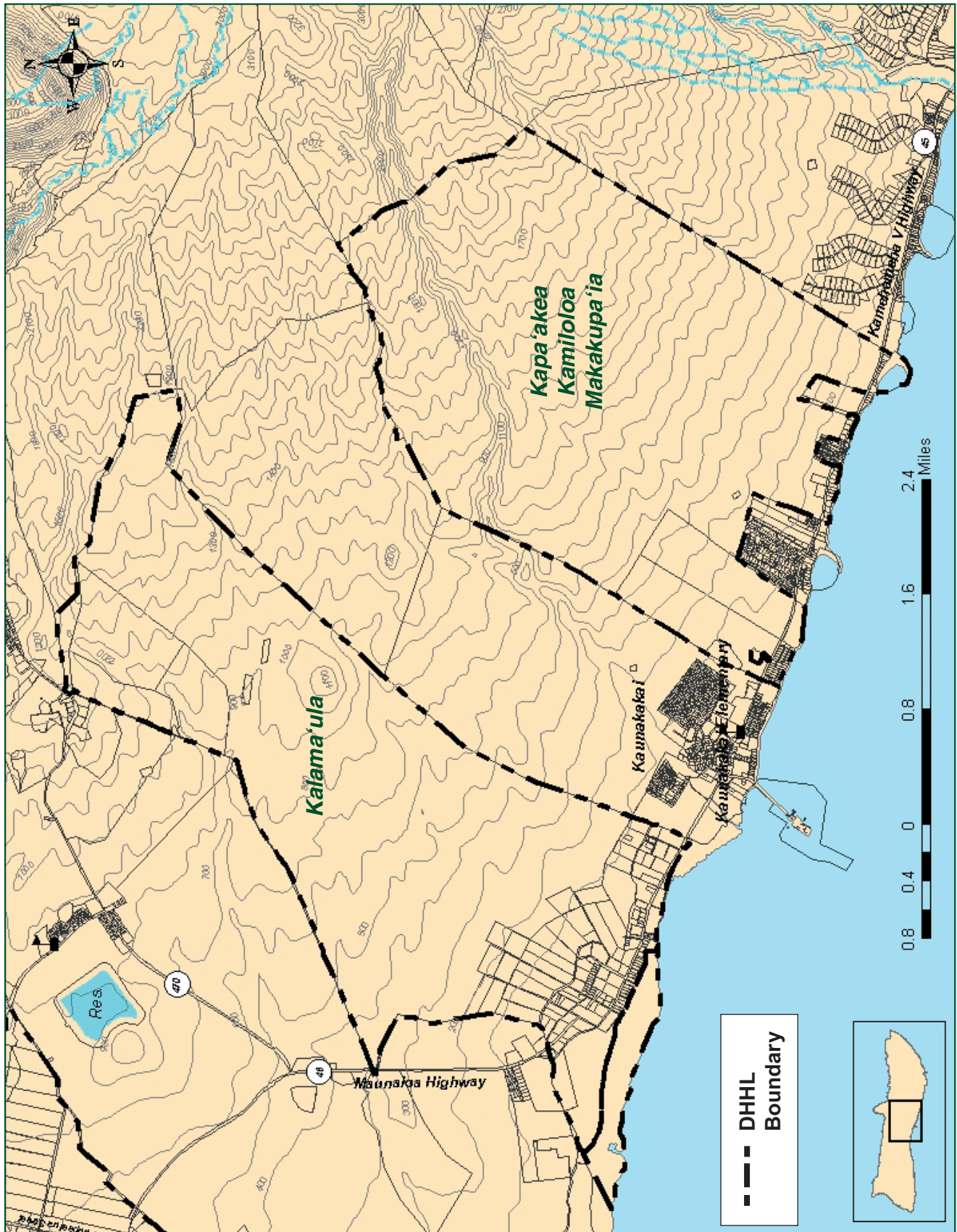


Figure 5.1 - DHHL Parcel in Kalama'ula



*Road Access* – Maunaloa Highway provides the primary access to Kalama'ula. The local neighborhood access consists of both paved and unpaved light-duty paved roads and unimproved roads. Any future development of the area will require roadway improvements.

*Water* – Kalama'ula receives water from the DHHL owned and operated Ho'olehua Water System (HWS) which provides water to Ho'olehua homestead, the airport, Moloka'i High School and Kualapu'u Elementary School, Moloka'i Ranch, and the Meyer Estate. The Kalama'ula homestead area currently uses .08 mgd. The existing HWS source has a safe source capacity .58 mgd and can not meet the existing maximum daily demand of .63 mgd required by all existing user groups. The HWS draws its potable source from the Kualapu'u Central Aquifer (KCA). According to the CWRM, the KCA has a developable yield of 5 mgd. Estimates of existing water demand indicate that approximately 2 mgd to 2.6 mgd are withdrawn from the aquifer. Further, DHHL is legally guaranteed a 2.9 mgd reservation of water from the Kualapu'u aquifer.

*Wastewater* – Although the area is in close proximity to the County wastewater system situated in Kaunakakai Town, it is cost prohibitive to connect area to the existing system.

*Cultural Resources* – Cultural sites within the area such as Kapuāiwa Grove, 'Ōhi'apili Fishpond, 'Ōpae'ula heiau, Pu'upāpa'i heiau, Kalama'ula heiau, and Pu'uomo'o heiau should be protected and preserved for cultural learning and perpetuation.

### 5.3 COMMUNITY CONCERNS

Some of the key concerns expressed at the meetings held in Kalama'ula and Ho'olehua regarding the proposed alternatives included the following:

- Any proposed commercial use must be compatible to the needs of the community and have its support.
- Preserve access to mauka lands for subsistence hunting and cultural practices.
- Lands designated for Community Use land should be used for: Kūpuna housing or a long-term health care facility; parks and recreation spaces; and a middle school.
- A priority should be made to resolve existing flooding conditions.
- Provision of water to support existing and future homestead development and use needs to be in-place. Should consider viable alternative options for water source including mauka reforestation.

## Planning Considerations

### OPPORTUNITIES

- Strong and growing rural community with existing social services
- Suitable land for limited residential development
- Important cultural and natural resource sites
- Established community identity

### CONSTRAINTS

- Variable slopes
- Need new potable water source
- Flooding and drainage issues
- IWS development for wastewater



*Southern view of Pu'u Luahine, an area discussed for possible future reforestation in Kalama'ula*







## 5.4 LAND USE PLAN

A Development Plan was prepared for Kalama'ula in 1983 which considered this tract as a potential growth area of mixed uses. However, the plan was primarily focused on the makai area in and around the Kalaniana'ole Colony where development was viewed as an integration of residential, agricultural, and economic development designed to maintain the rural lifestyle that is characteristic of the area. Although many of the proposed phases for development have been implemented, the MIP recognizes the conceptual framework of the residential plan developed in 1983. In the Development Plan, there was a recognition that subsistence-based activities were integral to the lifestyle and the sense of place within Kalama'ula and that a designed residential community should be reflective of this concept.

For the MIP, the unawarded and undeveloped parcels were re-evaluated based upon present concerns and issues that were presented by DHHL staff and the community. *Figure 5.2* illustrates the proposed uses for this expansive property.

The MIP identifies the mauka portion of the site above Pu'u Luahine as Special District and will serve as a Nature Resource Management and Subsistence Area (NRM-SB) to ensure the protection of endangered and threatened plant species in the Moloka'i Forest Reserve and maintain access for subsistence-based hunting and gathering of forest resources. The existing Pastoral uses will be maintained.

Lands situated in the central corridor of the parcel that were previously considered as having potential for agricultural use but currently do not have the necessary infrastructure have been designated as General Agriculture to make them available for cooperative beneficiary farming or development groups rather than being given out as individual agricultural or pastoral homestead lots.

The main departure that the current MIP makes from the 1983 Development Plan is a reduction in the amount of commercial space allotted and an increase in community use. Throughout the community and DHHL staff meetings, a key consideration was ensuring that proposed land use activities matched the needs and character of the community these activities would occur in. In review of the existing commercial space and anticipated future island population growth for the next 20 years, an evaluation was made as to what level of commercial service was appropriate for all DHHL lands on Moloka'i and the space requirements necessary to support the level of service. Concurrently, it was highlighted that Kalama'ula is currently lacking stronger centers for community use, such as park space for existing and future residential development. Further, the

### **LAND USE PLAN**

#### **Existing Residential**

- (123) 1 acre lots on 210 acres

#### **Future Residential**

- (57) 1 acres lots on 88 acres

#### **Subsistence Agriculture**

- (63) 2-4 acre lots on 212 acres

#### **Pastoral**

- 539 acres

#### **Community Use**

- Existing Church Row, Kapuaiwa Grove; Homelani cemetery
- Proposed community parks and support services for Kūpuna housing
- 76 acres

#### **Special District Areas**

- Natural Resource Management and Subsistence Access Area (1,344 acres)
- Wetland (363 acres)
- Flood control (12 acres)

#### **General Agriculture**

- 2,353 acres

#### **Commercial**

- 12 acres includes Kulana 'Ōiwi





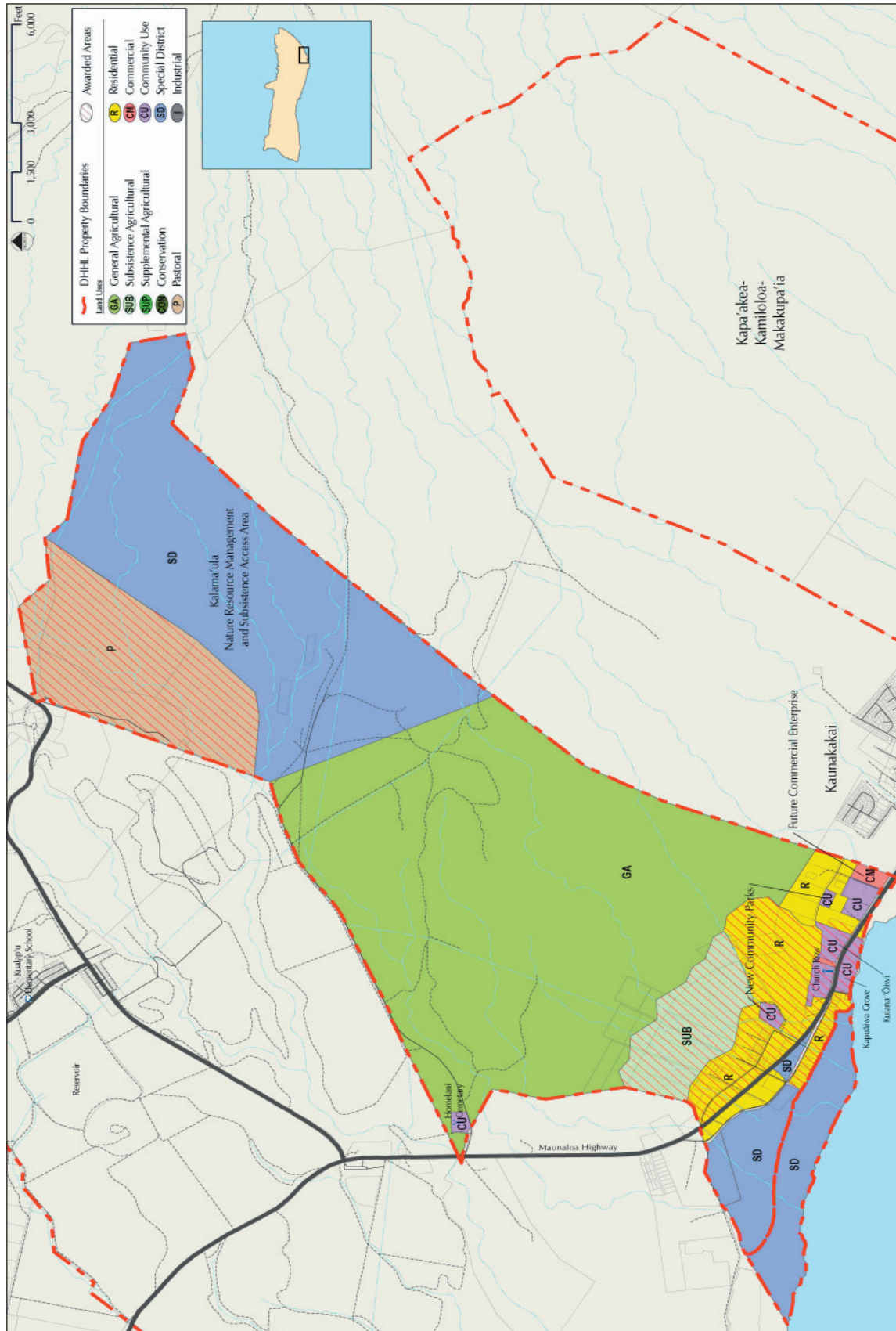


Figure 5.2 - Kalama'ula Preferred Land Use Plan



community strongly expressed a need for Kūpuna Housing and the sensibility of siting such a use near existing social support services as those provided at Kulana 'Ōiwi.

#### 5.4.1 RESIDENTIAL

Kalama'ula will continue to be a growing residential community on Moloka'i. A summary of the proposed number of lots and costs is provided in the table on the right.

Currently, Kalama'ula has 160 existing or awarded and undeveloped lots on 210 acres. The MIP proposes a limited growth of new residential development that would entail 49 1-acre lots on 70 acres in the eastern portion of the parcel and 8 1-acre lots on 11 acres in the section of the parcel adjacent and makai to Maunaloa Highway for a total of 57 new units.

Table 5.1 and Table 5.2 summarize the development costs. Large initial investments in off-site water infrastructure will be required. Individual Wastewater Systems (IWS) will provide wastewater treatment. Road development costs are reduced by providing some access to the residential homesteads along Maunaloa Highway and local collector streets.

#### 5.4.2 SUBSISTENCE AGRICULTURE

The residential subsistence concept was introduced in the 1983 Development Plan to encourage homesteader self-sufficiency. As the Kalama'ula area was noted for agricultural productivity, the Development Plan recommended a phased development of subsistence-based residences.

In Kalama'ula, 72 lots on approximately 212 acres have been leased for agricultural homesteads and are designated in the MIP as Subsistence Agriculture. These lots vary in size from 2-4 acres and are considered large enough for small-scale agriculture and keeps beneficiaries eligible for certain types of U.S. Department of Agriculture (USDA) loans.

	Cost (Millions)
On-Site	\$7.3
Off-Site	\$4.2
<b>TOTAL</b>	<b>\$11.5 M</b>

Table 5.1 - Kalama'ula Total Infrastructure Costs

#### **RESIDENTIAL**

##### **East End**

- (49) 1-acre residential lots
- 70 acres total

##### **Makai End**

- (8) 1-acre residential lots
- 11 acres total

##### **Costs**

- \$201,754 per lot



Undeveloped Subsistence Agriculture lands in Kalama'ula

	POTABLE WATER	WASTE-WATER	SITE PREP & ROADS	DRAINAGE	ELECTRICITY	TOTAL
<b>Major Factors</b>	Transmission lines, cxn to existing source	IWS	Enhance and construct additional	Assume 5' depth	Transmission lines	
<b>On-Site</b>	\$1.4 M	--	\$3.8 M	\$1.0 M	\$1.1 M	\$7.3 M
<b>Off-Site</b>	\$1.6 M	--	\$0.9 M	\$1.4 M	\$0.3 M	\$4.2 M
<b>TOTAL</b>	<b>\$3.0 M</b>	<b>--</b>	<b>\$4.7 M</b>	<b>\$2.4 M</b>	<b>\$1.4 M</b>	<b>\$11.5 M</b>

Table 5.2 - Kalama'ula Infrastructure Costs





### 5.4.3 GENERAL AGRICULTURE

Approximately 2,353 acres of central interior of Kalama'ula is designated General Agriculture. This will preserve the land for future uses while making it available to individuals and groups for short-term leases.

Much of this land is very rugged and unsuitable for most types of activities and development. Care must be taken to ensure that permitted uses are compatible to the lifestyle and values of existing pastoral and agricultural activities on Moloka'i and do not lead to further erosion of the land.

Proposed uses for this area could include limited opportunities for diversified agricultural or pastoral use; establishing portions of the mauka regions as an extension of the proposed subsistence access for hunting and gathering purposes; expanding the proposed cultural resource management area for potential programmatic needs. These uses could continue within the General Agriculture designation. Other possible activities include tropical forestry or hiking tours focusing on eco-education or adventuring touring.

No infrastructure improvements are proposed for this area. The roads should be maintained in their current condition.

### 5.4.3 SPECIAL DISTRICT AREAS

The Kalama'ula tract has three Special District Areas totalling 1,719 acres. The first area consists of 363 acres within the existing coastal wetlands near the Pālā'au district. In the past, a variety of waterfowl have been observed at the wetlands, utilizing parts of the area as a breeding ground; these species have included Alae ke'oke'o (Hawaiian Coots), Ae'o (Hawaiian Stilts), Ruddy Turnstones, Wandering Tattlers, Black-crowned Night Herons, and wild turkeys. It is feasible to consider the potential use for subsistence and limited community economic aquaculture options, usable only for brackish or salt water species. Any proposed development of aquaculture ponds would require a substantial amount of earthwork to control existing runoff.

The second Special District Area is comprised of 12 acres and is located within the southwestern corridor just makai of Maunaloa Highway. Given that the general area has been identified under the Federal Emergency Management Agency Flood Insurance Rate Maps system as highly vulnerable to flood conditions, a Special District designation was assigned to limit future expansion of the area in unsuitable land uses. Currently a Revocable Permit has been awarded for one acre in this area that is currently used as an automotive repair shop. The Department will need to evaluate the terms of the existing permit to determine if the existing activity is appropriate for the area and what options would be available to the permittee if relocation is required.



*Northern mauka view of Subsistence Agriculture lands, Kalama'ula*



*East view of Pu'u Luahine, General Agricultural and Special District lands, Kalama'ula*



*Existing flood prone area (Special District) in Kalama'ula*







healthy forest and water system and investigate the efficacy of threat abatement projects and the impact on the health of forest habitats and water resource quality.

#### 5.4.4 COMMUNITY USE

Approximately 83 acres have been designated for Community Use within Kalama'ula. These areas include the existing "church row," the Kulana 'Ōiwi Multi-Services Center, Homelani Cemetery, Kapuāiwa Grove, and future plans for community park space and kūpuna housing or service center.

Church Row consists of nine churches that have 30-year license agreements with the Department for land use that range from 1 to 4 acres. Churches form a background of Moloka'i community. New churches should be encouraged to locate in the area to heighten the identity of this strip.

Kapuāiwa Grove is said to have been planted in the 1860s by Lot Kapuāiwa (Kamehameha V), grandson of Kamehameha I, as Moloka'i was a favorite retreat of this ali'i. The grove was originally planted with 1,000 coconut trees covering an area approximately 10 acres, representing each warrior that served under his rule and provided shelter for a royal bathing spring that once existed near the shore. Today, there are a few hundred descendants of trees remaining from the original planting. Kapuāiwa Grove has great value historically and is located conveniently to be a great community resource. It should be planned for community events and cultural activities.

Located along Maunaloa Highway, the Kulana 'Ōiwi center serves as the central hub of social services for Native Hawaiians. Housed in the center are the Department, Kamehameha Schools, Alu Like, the Office of Hawaiian Affairs, the Queen Emma Foundation, and Nā Pu'uwai, part of the Native Hawaiian Health Care system and the Queen Lili'uokalani Children's Center. The unique feature of the center was that the participating agencies shared in the cost for land, building design, and construction and is considered to be a model that should be copied on all the island, offering convenience and accessibility for all users and beneficiaries of these government and private programs and services.

Approximately 50 acres of lands within Kalama'ula designated as Community Use will be reserved to support the expanding community that will result with future residential development. Neighborhood park space would be dedicated within the new residential area. Further, it was discussed that since Kulana 'Ōiwi center is the central hub of social services for Native Hawaiians, the future development of a kauhale kūpuna (elderly care center) would be situated near the center. It is envisioned that the proposed kūpuna housing project in Kalama'ula would emulate other existing facilities built and supported



*Kapuāiwa Coconut Grove (Community Use) in Kalama'ula*



*Entry to Homelani Cemetery (Community Use) in Kalama'ula*



*One of several churches that form "Church Row" (Community Use) in Kalama'ula*





by the Department, such as Kauhale Kūpuna o Waimānalo on O'ahu, an affordable housing project for native Hawaiians over the age of 62 with no blood quantum restrictions.

#### 5.4.5 COMMERCIAL

Approximately 13 acres, most of which is designated along the eastern boundary of Kalama'ula area and adjacent to 'Olo'olo Street are designated as Commercial use in Kalama'ula. During the planning process, the community expressed several different ideas as to what types of commercial and/or community-based economic development projects could be created and supported in this area. These ideas included additional support for research and development of diversified organic and non-Genetically Modified Organisms agricultural products; multi-cropping species for aquaculture; conservation operations for watershed planning and reforestation; a media production facility for community and educational programs; long-term health care services; commercial kitchen to support a native Hawaiian health diet program; a center for recycling goods; and landscaping production area.

#### 5.4.6 PASTORAL

Three pastoral homestead leases are awarded within Kalama'ula and consist of 539 acres. Further some of the land currently designated as General Agriculture under the MIP is leased under a revocable permit to the Moloka'i Homestead Livestock Association for pastoral use.



*DHHL community meeting at Kulana 'Ōiwi center in Kalama'ula*



*Pastoral homestead in upper Kalama'ula*







As with 'Ualapu'e and Kapa'akea, Makakupa'ia and Kamiloloa, one of the three main Special District areas is a Nature Resource Management and Subsistence Access (NRM-SB) area in the northeastern corridor to the northern boundary of the parcel. For all of these areas, a site-specific management plan will need to be developed. Other natural resource management methods employed within the Moloka'i Forest Reserve have included a holistic approach to watershed management, which is similar to the traditional concepts of ahupua'a-based management. One approach to identify and assess a watershed management area and develop site-specific projects is the Site Conservation Planning Process, which has been utilized by The Nature Conservancy. This process uses the 5-S approach, which identifies Systems, Stresses, Source, Strategies, and Success measures through a scientific process. For DHHL management areas, provisions of ensuring access for subsistence-related activities and maintaining the integrity of wildlife habitat for flora and fauna resource that are relied upon in these subsistence activities needs to be integrated into any proposed management process.

For all of these areas, the management efforts will need to address several objectives including:

- a) threat and game management of invasive non-native plant species, feral ungulates, other non-native animals, human activities, environmental contaminants, and wildfires;
- b) water resources and watershed management to maintain quality and integrity of groundwater, surface water, and aquatic resources, as applicable;
- c) biodiversity protection, which includes endangered and threatened species protection, the rehabilitation of degraded habitats, and reforestation and plantings;
- d) cultural resource management to ensure that current-day traditional Hawaiian gathering practices are maintained, supported, and perpetuated;
- e) education awareness and public outreach to establish the necessary community partnerships that will be the pool for any labor-intensive projects such as fence construction, weed control, or trail maintenance;
- f) administrative coordination and communication to ensure adequate Department staffing is provided to coordinate overall tasks, maintain communication links with community and adjacent landowners, and implement, and ensure the planning process is effective and consistent; and
- g) monitoring and indicators to address management objectives and seek to monitor the relationship between a



*Ae'o (Hawaiian Stilt) found in wetland areas of Kalama'ula (Photo by National Park Service)*



*Common native habitat threat of feral ungulates (wild boar) on Moloka'i that provides a limited resource for subsistence hunting*



Section 6.0

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Kalaupapa-Pālā'au (Apana 3)





## 6.0 KALAUPAPA-PĀLĀ'AU (Apana 3)

### 6.1 EXISTING CONDITIONS

The DHHL lands in Kalaupapa and Pālā'au (Apana 3) consist of 1,474 acres, which are located on the northern plateau and peninsula of Moloka'i (*Figure 6.1*). The area of Pālā'au is comprised mostly of an ironwood forest and is currently under license to the State Department of Natural Resource, Division of State Parks that expires in 2011.

On the coastal peninsula fronting Awahua Bay lies Kalaupapa, which is a part of Kalawao County and historically noted as the settlement area for Hansen's Disease patients established in 1866. Less well known is that the area had a sizable population of Native Hawaiians that were residing on the peninsula prior to 1866 and were required to relocate to areas such as Kainalu. In 1975, the State Legislature passed several resolutions for the preservation of Kalaupapa. In December 1980, Congress accepted the recommendations to establish the Kalaupapa National Historical Park.

As early as 1978 in a series of studies, one of the special management concerns that were identified was the ownership and use of Hawaiian Home Lands at Kalaupapa, which comprise one quarter of the National Park Service (NPS) use in the western section of the peninsula. The NPS currently has 37 years remaining on its 50 year lease.

The peninsula is separated from the rest of the island by a 1,600 foot cliff. On the central portion of peninsula lies Kauhako Crater at a 300 foot elevation. The rainfall varies from 25 inches near the shore to 45 inches up in the cliff regions and the park. The historical settlement area within the peninsula lies in the State Urban district. All of the remaining DHHL lands on the peninsula lie in the Agriculture district. The cliffs and park lie in the Conservation district.

### 6.2 OPPORTUNITIES AND CONSTRAINTS

The discussion below summarizes the major factors influencing possible land uses in Kalaupapa.

*Preserving and perpetuating the Living Legacy of Hansen Disease Residents* – One of the most common themes that emerged out of the community meetings was that the MIP must ensure the legacy of some 8,000 Hansen Disease residents that made Kalaupapa their home. Statewide there are approximately 40 patients (average age 76) who contracted the disease prior to the introduction of drug treatments. The majority of these patients still reside full or part time at Kalaupapa. There are more than 400 built structures within the settlement, of which 183 have

#### EXISTING USES

- General lease of 1,247 acres to National Park Service - Kalaupapa
- License of 233 acres to DLNR for Pālā'au State Park which provides scenic overview to Kalaupapa
- 189 NPS-prioritized structures either currently used or designated for historic preservation



View of Kalaupapa settlement area from Pālā'au lookout

#### COMMUNITY VOICE

*"The legacy of Kalaupapa and its people need to be respected and always remembered.."*



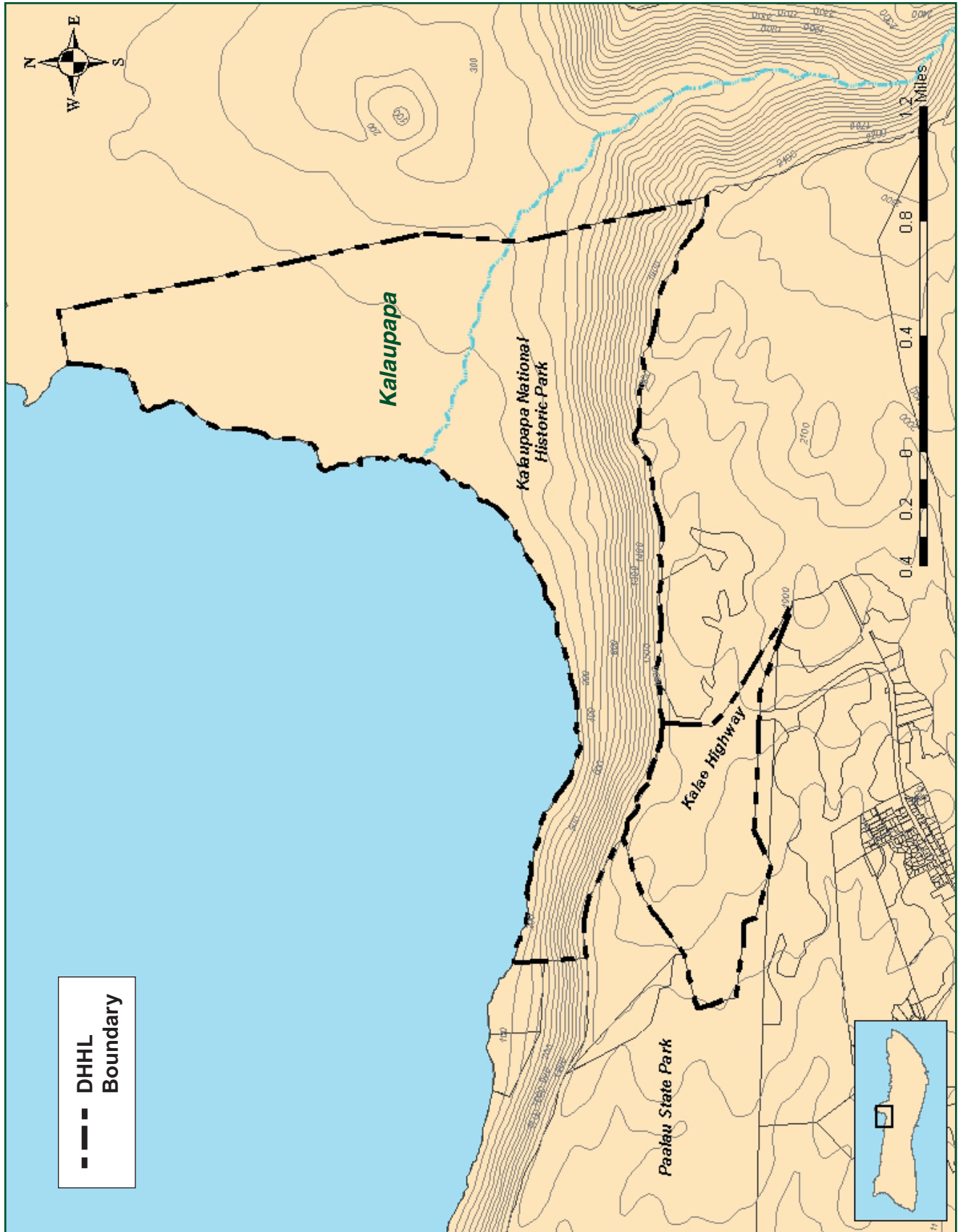


Figure 6.1 - DHHL Parcel in Kalaupapa-Pāla'au (Apana 3)





been assessed and evaluated as priorities for preservation by the NPS. It was suggested by beneficiary and agency interests that a legacy program could take several forms: preservation of the area as a historical district; reintroduction of native Hawaiian beneficiaries to the homestead; a balanced integration and partnership between DHHL and NPS.

There are two prominent opinions among the community and the Kalaupapa residents themselves, one being that no planning should be considered while the remaining residents are still alive. Other community members equally feel that in order to preserve the legacy, planning must involve the mana'o of those whose memories are to be preserved and perpetuated for subsequent generations. Further, community members with genealogical ties to the families that were required to relocate upon the establishment of the Hansen Disease settlement have also expressed an interest in reasserting familial relationships to the 'āina of Kalaupapa.

*Interest of National Park Service to retain long-term involvement with Kalaupapa*– The NPS has expressed a strong desire to acquire the DHHL portion of the park for its long-term use. Although DHHL is not interested in any land exchange for NPS to acquire the land, the Department is open to developing a cooperative strategy with NPS and establish a working group comprised of the primary stakeholder interests to develop a long-term plan that seeks to provide a balance of interests and activities that are compatible to the overall interest of preserving the legacy of Kalaupapa. According to NPS sources, the park operating base for FY 2004 was \$ 2.4 M. Not included in this operating expense is an additional \$3.9 M from a line item construction funding source for preserving historic buildings within the Kalaupapa settlement area and correct existing safety concerns.

*Improvements to Infrastructure*–Existing infrastructure are in need of repairs and or replacement, including well pumps and storage tanks for potable water and improvements to the telephone system.

*Limited Access* – There are approximately 6 miles of paved roads and 8 miles of unpaved roads in the settlement area. Additionally there are 3.7 miles of trail systems, including the path that extends from Pālā'au State Park to the peninsula. There is a small airport and harbor that are utilized on a limited basis.

*Beatification of Mother Marianne Cope and Canonization of Father Damien* – Two of the most influential historical figures that dedicated themselves to serving those afflicted with Hansen's Disease at Kalaupapa. The beatification ceremony for Mother Marianne Cope was held for May 2005 while the Vatican is verifying attributed miracles that would confirm the

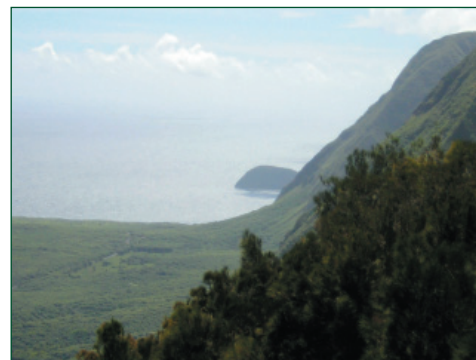
## Planning Considerations

### OPPORTUNITIES

- Perpetuating the legacy of Kalaupapa
- Important cultural and natural resource sites
- Impact of canonization of Father Damien and beautification of Mother Marianne Cope
- National Park Service interest long term perpetuation of area

### CONSTRAINTS

- Limited access by trail, small plane or barge
- Expensive to maintain, improve, or provide new



View of sea cliffs that form Conservation area in Kalaupapa





canonization of Father Damien. Both events will increase a global interest in the legacy at Kalaupapa and may encourage an increased number of visitors to the area that view Kalaupapa as a healing center.

### 6.3 COMMUNITY CONCERNS

In addition to meetings held in Kalama'ula and Ho'olehua, DHHL staff also traveled to Kalaupapa in December 2004 to meet with the Patient's Advisory Council and the National Park Service to identify the immediate needs and concerns of the patients. Comments regarding the proposed alternatives included the following:

- Preserving the legacy is paramount
- Patients/residents wishes must be respected
- Maintain "closed" community - only use for education
- Ensure that educational programs teach the old ways
- Any topside development could bring more interest to peninsula
- Any Palā'au development should benefit native Hawaiians
- Hawaiian interests should be reflected in future plans
- NPS needs to work with native Hawaiians
- DHHL should retain the lands of Pālā'au

### 6.4 LAND USE PLAN

The character of Kalaupapa will be retained as a unique community whose legacy is to be defined by its wide range of historical use. Given the significant historical context of the area and that the existing residential population is comprised of both native Hawaiians and non-Hawaiians, the boundaries of the historical settlement area will be designated as Special District. Two distinct areas on the peninsula have been designated as Community Use, creating the nodes to maintain a cultural presence and linkage of those 'ohana that once reside there prior to the establishment of the settlement and those that plan to commit themselves as stewards to this area. Figure 3.2 illustrates the proposed uses for the Kalaupapa and Pālā'au (Apana 3) parcels.

Major improvements to infrastructure were only considered for the Pālā'au (Apana 3) parcel and include site preparation, provision of water and utilities for the proposed commercial area.

#### **LAND USE PLAN**

##### **Existing Residential**

##### **Community Use**

- (2) 3.5 acres on the Kalaupapa parcel; one area near the airport and the other fronting the Awahua Bay access

##### **Special District Areas**

- Existing Kalaupapa Patient Residence (621 acres)
- Pālā'au Forest Lands (226 acres)

##### **Commercial**

- 5 acres

##### **Conservation**

- 609 acres



*Community Use area near the Kalaupapa Airport*



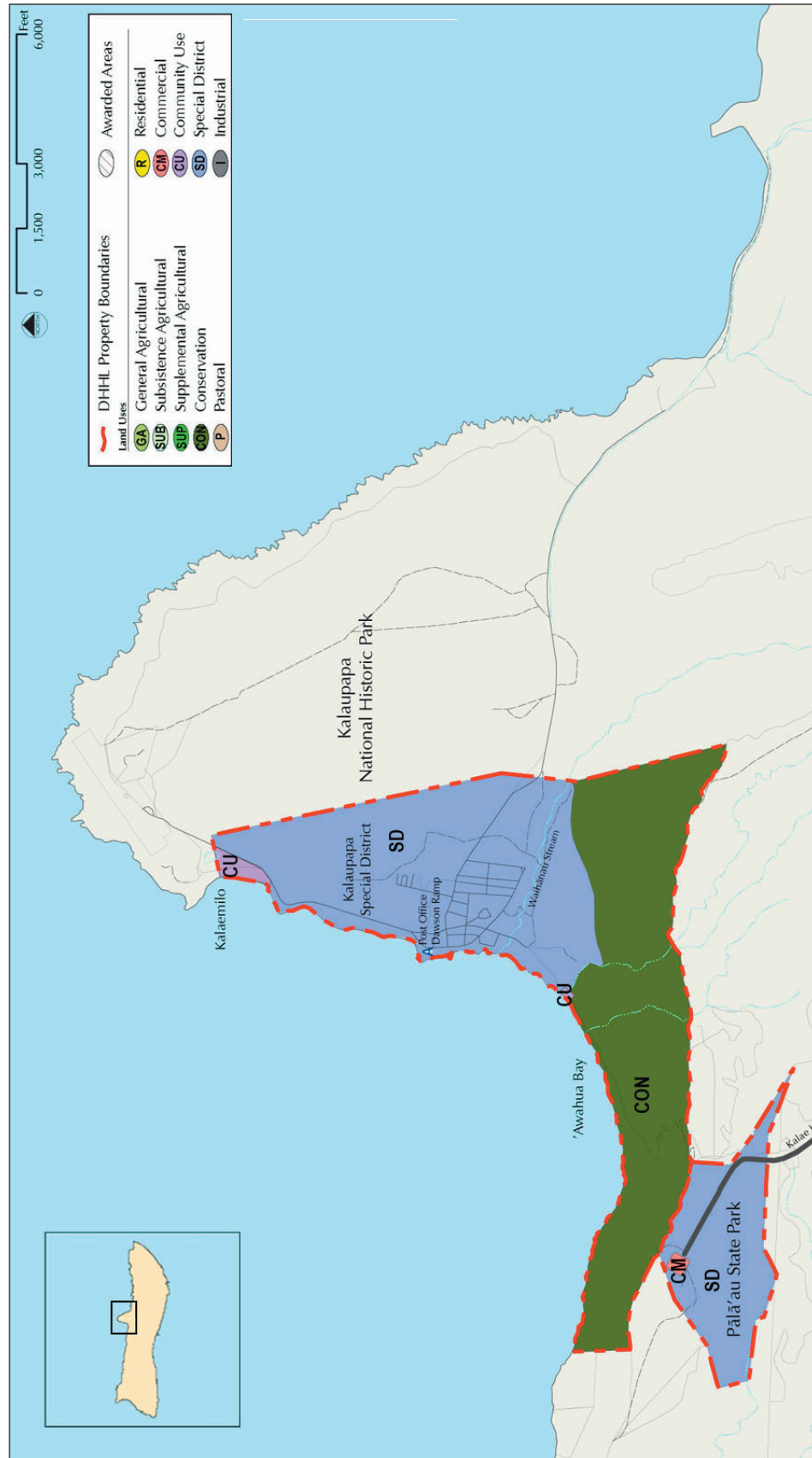


Figure 6.2 - Kalaupapa-Pālā'au Preferred Land Use Plan







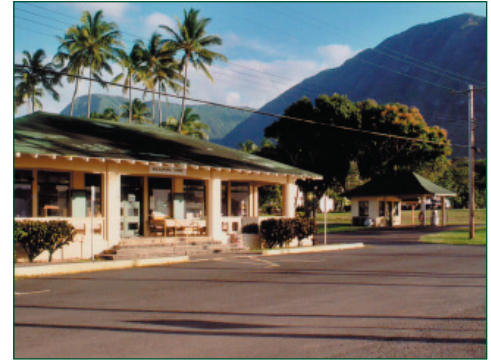
#### 6.4.1 SPECIAL DISTRICT AREAS

Approximately 226 acres in the Pālā'au (Apana 3) tract will remain as a forested reserve area that could continue to be used as for recreational purposes. There are no plans for development in this area.

The 621 acres designated as Special District in the Kalaupapa Peninsula encompasses the existing historical settlement area. This designation would allow for the current lease agreement with NPS to continue. However, guidelines will need to be established with the Patient's Advisory Council, Department of Health (DOH), NPS, and DHHL as to further considerations to the long-term uses of this designated area. It was expressed in several community meetings, including those held in Kalaupapa, that the area could serve as a pu'uhonua (traditional concept of a refuge) that could be envisioned as a native Hawaiian healing and wellness center. This consideration of a wellness center may be a viable option that accomplishes several things: it maintains the historical integrity of the area which NPS will continue to oversee; promotes the sense of how this area was engaged by its residents for purposes of finding inner healing and resolve to address the circumstances that evolved in their isolation and how the land does heal and continues to do so if maintained properly; establishes a native Hawaiian presence with cultural practitioners of lā'au lapa'au and lomilomi providing therapy and treatments that could be interwoven with the educational curriculum of traditional hālau and other academic institutions such as the Maui Community College-Moloka'i Campus and other community organizations dedicated to physical and spiritual wellness as well as staffing to assist with the operations and maintenance of the center; allows for those families of non-Hawaiians Hansen Disease residents to maintain presence and access to the area; and finally it advocates that the DOH as the health care providers and DHHL as the land stewards have a kuleana to those remaining patients as long as they continue to live and dwell in Kalaupapa.

#### 6.4.2 COMMUNITY USE

Approximately 7 acres in two areas on the peninsula have been designated as Community Use. The first area is situated along the northern coastal border of the parcel that is out of the historical settlement area. A few structures currently exist and it is envisioned that this could be an area for housing future staff of the wellness center or the expansion of the historical park. As DHHL advocates on behalf of its beneficiaries, it would be that the Department's preference that any such staffing needs would be primarily filled by qualified Moloka'i island residents and homesteaders. Further, the Department does maintain its commitment to support the authority of the Patient's Council.



*Kalaupapa Store in Special District settlement area*



*Coastal area near Awahua Bay, Kalaupapa*



*Gravesite of Father Damien, Kalaupapa*







Therefore, any proposed use of the area would be licensed to and placed under the management and control of native Hawaiian patients. The second Community Use area near the pier landing fronting Awahua Bay and the trailhead leading to the cliff trail would serve a similar future purpose but would require funds for infrastructure. No structures exist within this area but could be utilized for culturally-related activities and access.

### 6.4.3 COMMERCIAL

The MIP emphasizes the creation of cultural community center in Pālā'au that is culturally appropriate to the perpetuation of the traditional cultural practices of Hawai'i but is specific to the historical legacy of Moloka'i and Kalaupapa specifically. This center would assist hālau on Moloka'i and other community educational initiatives in building a cultural community center that reflects the values and principles that are invoked through their respective traditional cultural practices. The focus of creating an interactive learning center would be to nurture cultural and economic ties of Kanaka 'Ōiwi to other indigenous groups across the Pacific and internationally based upon the guidance of values, practices, and beliefs of the Moloka'i people. This would set this center apart from other Hawaiian institutions. A working group would be formed to develop this project and would involve researching traditional hālau building practices and looking at contemporary cultural community centers development projects as models. Programmatic development, building design, and landscaping will be based upon the traditional knowledge pertinent to the area and to the knowledge base desired to be perpetuated. Community beneficiaries will be directly involved in the visioning and planning of this center. DHHL envisions the creation of this cultural community center to be a full service center whereby charter schools or immersion schools could utilize the school in the day time and other hālau could utilize the center in the evenings and weekends can be shared with the community. Further, the project could potentially integrate



*Kauleonanahoa cultural site, Pālā'au*



*Pālā'au State Park, potential future site of cultural center*

	POTABLE WATER	WASTE-WATER	SITE PREP & ROADS	DRAINAGE	ELECTRICITY	TOTAL
<b>Major Factors</b>	Transmission lines, cxn to existing source	IWS	Enhance and construct additional	Assume 5' depth	Transmission lines	
<b>On-Site</b>	\$1.4 M	--	\$1.7 M	\$0.9 M	\$1.8 M	\$5.8 M
<b>Off-Site</b>	--	--	--	--	--	--
<b>TOTAL</b>	<b>\$1.4 M</b>	<b>--</b>	<b>\$1.7 M</b>	<b>\$0.9 M</b>	<b>\$1.8 M</b>	<b>\$5.8 M</b>

Table 6.1 - Kalaupapa-Pālā'au Infrastructure Costs





on-going efforts of NPS to possibly create an on-site visitor's center that could be modeled after other traditional centers that provide opportunities for learning about an area without the necessity to tract into and have a direct impact on the peninsula. For example, the Native Alaskan Heritage Center provides learning opportunities with native groups through various media forms, on-hand learning experiences, thereby providing sufficient opportunity for some visitors to "experience" the historical context without to the necessity to physically visit the site. Further, local community organizations have created meaningful centers of learning such as the Hana Cultural Center, which celebrates the area of as the birthplace of Queen Ka'ahumanu with a traditional hale and native gardens. DHHL will seek to develop a wide range of partners in the development of the center's master plan. It is envisioned that this center could be a hub of community economic opportunity that through the creation of programs that stem from the people of Moloka'i could be used to reach fellow kamaaina and local residents as well as scholars and visitors from around the world. The community center and educational facility could be a welcoming house that blends with the area's features and landscape. Potential facilities within the center would include exhibit and demonstration areas, a theater, café, gift shop, and a large gathering place for live performances of songs, stories, and dance as well as hosting forums, banquets, and other special events. Cultural representatives from the island would share cultural information and lead many of the interactive activities. Further, the center would have a media component that could be utilized by the community for the purposes of recording and preserving the legacy and stories of those kūpuna that are still alive. Media tools could be integrated into self-guided tours of either designed exhibits or that would highlight the beautiful setting of natural or cultural landscapes within the Pālā'au region. Educational programs could be created to fit the unique curriculum needs of various age groups from elementary through college. Such activities could be geared on native games for elementary school students, conducting oral histories for middle through high school. The key emphasis would be to create experiences of the unique culture of Moloka'i that links keiki, kamali'i, and 'ōpio with mākua and kūpuna.

#### 6.4.4 CONSERVATION

The 609-acres of Conservation District along the cliffs of are also designated as such under the State Land Use District..



*Model of traditional hale at Hana Cultural Center (Photo by Hana Cultural Center)*



Section 7.0

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Ho'olehua-Pālā'au (Apana 1 & 2)







## 7.0 HO'OLEHUA-PĀLĀ'AU (Apana 1 & 2)

### 7.1 EXISTING CONDITIONS

The DHHL properties in Ho'olehua and Pālā'au (Apana 1 & 2) consist of 13,478 acres within the northern central plateau and southern coastal corridor of Moloka'i, respectively. The two parcels comprise approximately 8% of the island's total land acreage (*Figure 7.1*).

Fronted by Maunaloa Highway, Ho'olehua is a rural agricultural community whose most notable anecdote is that it was the first area to receive Hawaiian homesteads following the passage of the Hawaiian Homes Commission Act of 1920. In February 1923, the first 13 homesteaders settled in Ho'olehua. Some of the first crop cultivations included tomatoes, corn, watermelons, sweet potato, and cucumbers.

The lands of Ho'olehua are varied in topography, ranging from level plains to rolling hills and sea cliffs at the northern coastal boundary. The elevation in the region varies from 10 ft. along the Pālā'au coast and southern tip of Ho'olehua and extend to hills at 1300 ft. to the west. Kalaupē'elua and Mane'opapa Gulch bisect the northeastern section of Ho'olehua and Anahaki Gulch in the northwest. The seacliffs to the north rise 600 ft. in the eastern portion and to the west the lands transforms from cliffs to gentle sloping fields to protected beach access at Mo'omomi.

The lands in Ho'olehua and Pālā'au (Apana 1 & 2) are designated as Agriculture, Conservation, and Urban under the State Land Use Commission system.

### 7.2 OPPORTUNITIES AND CONSTRAINTS

The table to the right summarizes and discussion below summarizes the major factors influencing possible land uses in Ho'olehua-Pālā'au.

*Agricultural Lands* –Given the large lot size, superior soil conditions, fairly level topography, dry weather, minimal exposure and contact to introduced crop pests and disease, and access to affordable irrigation water, Ho'olehua is characterized as some of the best agricultural lands within the State.

*Established Homestead* – Ho'olehua is a rural agricultural and residential community with the majority of awards ranging from 1 to 40 acres. The smaller lots are situated in the northeastern corridor of Ho'olehua, near Moloka'i High School and the Lanikeha Community Center.

*Desire for Subdivision* – As the oldest homestead community, the 'ohana that reside within these areas are comprised of at least 3-4 generations that have resided on these lands since the

#### **EXISTING USES**

- **521 homestead leases: 153 residential, 347 agricultural, 21 pastoral in Ho'olehua**
- **Various General Leases, Revocable Permits, and Licenses for agricultural and/or pastoral uses, church and community organizations, a credit union, and the U.S. post office**
- **Subsistence fishing zone at Mo'omomi Preserve**

#### **COMMUNITY VOICE**

*"Ho'olehua is a safe and quiet Hawaiian community where the values of aloha 'āina and kokua are shared and embraced among families and neighbors..."*



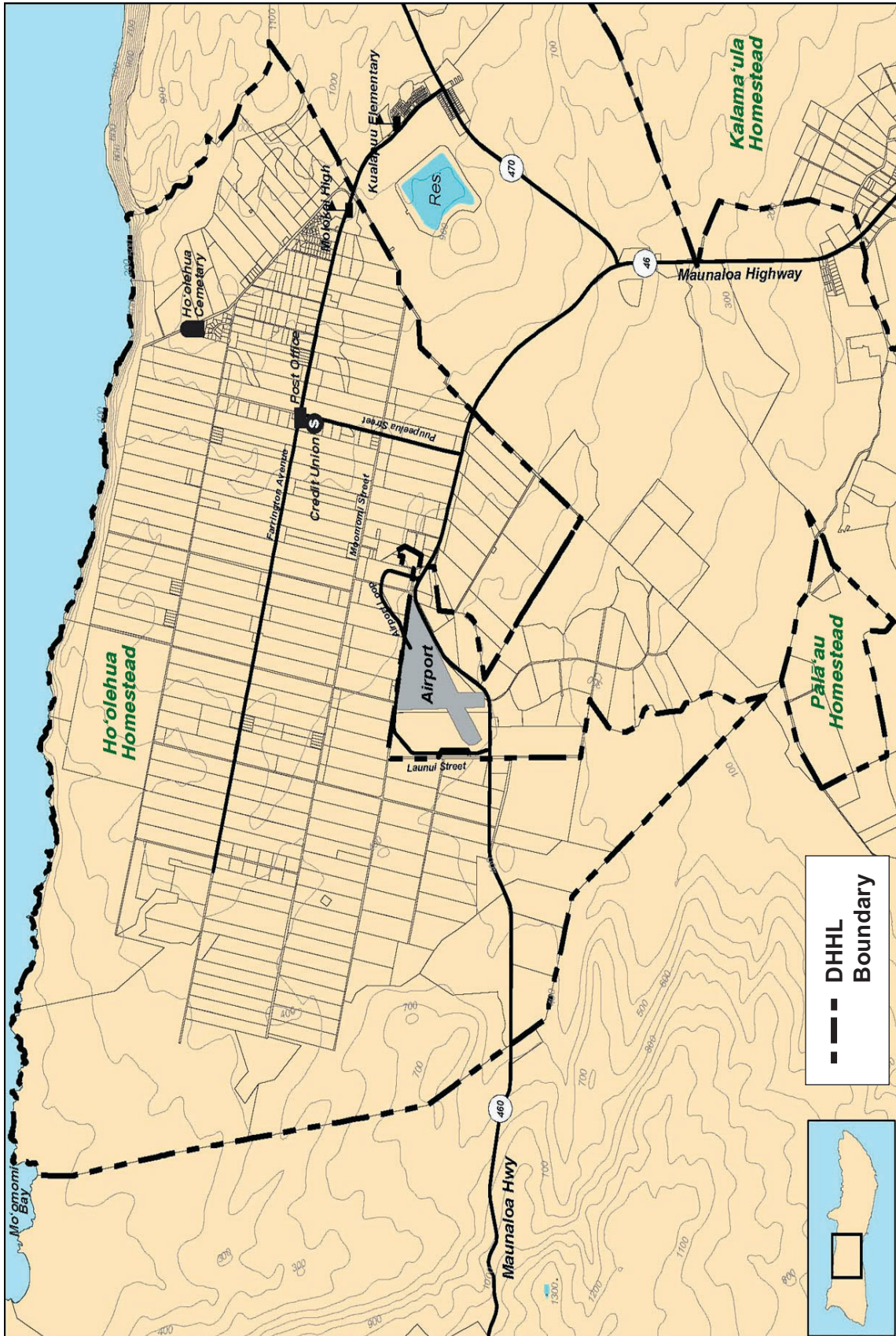


Figure 7.1 - DHHL Parcel in Ho'olehua-Pālā'au (Apana 1 & 2)







inception of the homestead program. A group of Ho'olehua families have indicated a strong desire for the Department to allow for the subdivision of existing leased lands to provide housing opportunities for children and grandchildren.

*Access and proximity to airport* – Pu'upe'elua Avenue and the Airport Loop are both important roads within DHHL's Ho'olehua tract, while Maunaloa Highway provides access from Ho'olehua to either the northeast or southwest areas of the island. The Moloka'i Airport abuts the property and its close proximity serves as a potential to develop some level of commercial-based activity linked to the predominant area use of agriculture that could more efficiently utilize airport services for the export of goods.

*Water* – Ho'olehua receives potable water from the DHHL owned and operated Ho'olehua Water System (HWS), which is serviced by the Kualapu'u Aquifer. The existing HWS source has a safe source capacity .58 mgd and can not meet the existing maximum daily demand of .63 mgd required by all existing user groups. The HWS draws its potable source from the Kualapu'u Central Aquifer (KCA). According to the CWRM, the KCA has a developable yield of 5 mgd. Estimates of present draws from the aquifer range from approximately 2 mgd to 2.6 mgd. Further, DHHL is guaranteed a 2.9 mgd reservation of water from the Kualapu'u aquifer, which has been upheld in two court cases.

Further, Ho'olehua is the only homestead with a dedicated irrigation water system, the Moloka'i Irrigation System, in which homesteaders have prior rights to two-thirds of this water as mandated in the Hawaiian Homes Act. The Moloka'i Irrigation System (MIS) is owned and operated by the State of Hawai'i, Department of Agriculture and is regulated under Chapter 4-152 of the Hawai'i Administrative Rules (HAR). Current use estimates of the MIS range from 3.35 to 4.46 mgd. An October 2001 Assessment Report estimated that there is 5.8 to 7.4 mgd of source available presently based on flow from Waikolu, which is the source of the MIS. Although information is sparse, various reports estimate that future demand uses range from 7.28 mgd to 42.9 mgd. The wide range of numbers makes it challenging to draw any conclusions about the source capacity and future demand of the MIS, however there are some common themes throughout all of the reports. All reports agree that the system has been plagued by drought in recent years and needs to develop some alternative water sources; the system is old and has maintenance problems. Ho'olehua may be able to receive more irrigation water, however, this would require significant upgrades and improvements to the MIS. Expansion of diversified agriculture is limited by the problems with the MIS.

## Planning Considerations

### OPPORTUNITIES

- Best agricultural lands on the island and within the State
- Established rural homestead with a strong community identity
- Expressed desire by existing families for subdivision allowance to provide housing opportunities for multiple generations to live
- Close proximity to airport provides potential marketing linkage for agricultural production on Moloka'i
- Coastal resources at Mo'omomi Preserve
- Provisions for limited growth in designated areas allows for more beneficiaries to be placed on homesteads

### CONSTRAINTS

- Issues of sufficient supply of potable and irrigation water sources for future growth
- No existing wastewater infrastructure for future development
- Utilization of Pālā'au (Apana 1 & 2) lands severely limited due to flooding and drainage conditions





*Wastewater* – It is not feasible to connect to the closest wastewater system situated in Kaunakakai Town.

*Flooding & Wetlands in Pālā'au* – The lands of Pālā'au (Apana 1 & 2) are subject to periodic flooding and as a wetland habitat is a natural drainage collector of stream and channel runoff.

*Coastal Cultural Resources* – Mo'omomi Preserve (921 acres), created in 1988, is an intact beach and sand dune system where communities of native grasses and shrubs grow more rare coastal species than in any other single place in the main Hawaiian Islands. The preserve harbors more than 22 native Hawaiian plant species (four of which are globally rare or endangered), as well as an important nesting site for the endangered green sea turtle. The pueo (Hawaiian owl) is one of the few native land birds that can still be observed regularly at Mo'omomi. Native shorebirds, like sanderlings and plovers, and seabirds, like the 'iwa (great frigate) can also be seen along the shoreline. Mo'omomi Preserve is managed in partnership with the State DLNR through the Natural Area Partnership Program.

### 7.3 COMMUNITY CONCERNS

Some of the key concerns expressed at the meetings held in Kalama'ula and Ho'olehua regarding the proposed alternatives for Ho'olehua and the Pālā'au (Apana 1 & 2) tracts included the following:

- Create a community use area near the high school for park and other recreational activities.
- Provide opportunities for subdividing existing agricultural lots for families to provide housing opportunities for keiki and mo'opuna
- Subdivision means accommodating an increased density in a rural community. Does this "urbanization" mean that agricultural land goes away?
- Provide areas of commercial activity near airport
- Homesteaders need financial and training assistance with farming activities
- Is there enough potable and irrigation water to support future growth in Ho'olehua?

### 7.4 LAND USE PLAN

A Development Plan was prepared for the Ho'olehua-Pālā'au area in 1986. The land use concept plan addressed three major land use components: a) creating a focal point for the community; b) assessing and supporting the agricultural potential of these lands; c) generating economic opportunities for the homestead community within Ho'olehua. The MIP focuses on the same



*Pālā'au (Apana 1 & 2) wetland area*



*Mo'omomi Preserve and Subsistence Fishing Area in Ho'olehua*



*Entry Sign into Moloka'i High and Intermediate School, Ho'olehua*







three components with additional consideration given to the feasibility of subdividing existing agricultural lots and to preserve the area's cultural and natural resources that support the subsistence lifestyle of homesteaders. *Figure 7.2* illustrates the proposed uses for Ho'olehua.

The general approach for Ho'olehua is to maintain the integrity of large parcels of agricultural land for existing and future agricultural use while assessing where future homestead growth can be directed to minimize impacts to agriculture activities. The plan evaluated necessary infrastructure development or improvements to provide the means for multiple generations of families to live and work together. A major limiting factor currently is providing potable and irrigation water from existing sources with anticipated demand.

The overall cost to develop Ho'olehua is estimated to be \$13.0 million. The off-site and on-site costs are summarized in *Table 7.1* and *7.2*. Major infrastructure improvements include developing a new source, storage, and transmission of potable water; individual wastewater systems, and road improvements. Most of the land in Ho'olehua are a low priority except for the previously awarded Nā'iwa lots. Priorities are discussed further in Section 8.0.

#### 7.4.1 RESIDENTIAL

There are two distinct areas that comprise approximately 55 acres in Ho'olehua that are designated as residential. The first area is bounded by Farrington Avenue, Pu'u Kape'elua Avenue, and Pu'u Kapele Avenue and consists of half-acre to 5 acre lots that are serviced by paved roads, potable and irrigation water. These lots are considered to be the central emphasis for a rural residential core area. Many of the homesteaders that reside on these lots do have an unattached 40 acre agricultural lots in lands south of Keonelele Avenue.

#### 7.4.2 AGRICULTURE

Ho'olehua is viewed by DHHL as a valuable asset for both economic and subsistence-based agriculture activities for its beneficiaries. As such, a modified Land Evaluation and Site Assessment (LESA) was utilized by the planning team to preliminarily assess the relative value of agricultural land in Ho'olehua. The LESA is comprised of two parts: a land evaluation that assesses the soils on the site suitable for crop production and a site assessment that considers three factors: agriculture land use, compatibility and impact of uses, and existing infrastructure. The agricultural suitability is normally scaled from 0 to 300 points. For purposes of evaluation, an area that receives a score greater than 175 points is considered suitable for agriculture use only; 150 to 175 points shall be

### **LAND USE PLAN**

#### **Existing Residential**

- (44) .5 to 5 acre lots on 55 acres
- General Agriculture
- 3,681 acres

#### **Supplemental Agriculture**

- (135) 35 acre lots on 5,811 acres

#### **Subsistence Agriculture**

- (135) 5 acre lots on 1,572 acres
- (65) 2 acre lots on 185 acres in "South Core"
- (29) 2 acre lots on 83 acres in "North Core"
- (58) previously awarded Nā'iwa lots on 298 acres

#### **Pastoral**

- (24) lots on 923 acres

#### **Community Use**

- 73 acres for existing Lanikeha Community Center, Ho'olehua Fire Station, Moloka'i High School and Ho'olehua Cemetery and church leases and proposed expansion of center to include park
- 50 acres for Mo'omomi Preserve

#### **Special District Areas**

- 660 acres for CRM and Nature Reserve areas

#### **Commercial**

- 40 acres as part of Town Center focus
- 13 acres as a consideration to acquisition from DOT, Airports Division

#### **Conservation**

- 46 acres









considered marginal for non-agricultural development and mitigating factors would need to be evaluated; less than 150 points deems the area suitable for non-agricultural development. For Ho'olehua, a general evaluation of soil was conducted based upon soil classification maps provided by the U.S. Department of Agriculture Soil Conservation Service (SCS). The lands in Ho'olehua were rated with a modified value of 205, thus affirming that agriculture should be the primary focus of this area's ongoing and future growth. In addition to the LESA conducted by the planning team, input was also provided by interested farmers that are currently utilizing lands in Ho'olehua as well as the Moloka'i Farmer's Association for various agriculture uses to assess some of the major concerns and issues facing the existing and future market in this

For purposes of the MIP, agricultural lands in Ho'olehua were further classified as subsistence, supplemental, and general. Definitions for the three land use types are provided in Section 2.0. The purpose of these designations for Ho'olehua was to provide a mechanism that preserves the integrity of valuable large parcel agricultural lands that would be designated supplemental agricultural lands. These lands would be maintained as is with no additional structures added to the land. However, lands designated as subsistence agriculture would be considered under the MIP as potential lands suitable for subdivision based upon several policy provisions and infrastructure limitations.

### 7.4.3 GENERAL AGRICULTURE

Most of the 3,681 acres designated as General Agriculture consists of rugged or difficult terrain without existing infrastructure for irrigation water and limited road access via unimproved dirt roads. General Agriculture lands will be available for cooperatives or a hui to develop, farm, and or ranch. However, necessary improvements to the land may be cost prohibitive for partnerships that are financially limited.

	Cost (Millions)
<b>On-Site</b>	\$19.4
<b>Off-Site</b>	\$6.8
<b>TOTAL</b>	<b>\$25.8M</b>

Table 7.1- Ho'olehua-Pālā'au Total Infrastructure Costs



Supplemental and Subsistence Agricultural parcel in Ho'olehua

	POTABLE WATER	WASTE-WATER	SITE PREP & ROADS	DRAINAGE	ELECTRICITY	TOTAL
<b>Major Factors</b>	New source, storage, transmission	IWS	Enhance and construct additional	Assume 5' depth and 10% road length	Transmission lines	
<b>On-Site</b>	\$1.7 M	--	\$13.1 M	\$2.1 M	\$2.1 M	\$19.0 M
<b>Off-Site</b>	\$4.2 M	--	\$ 2.0 M	\$0.0 M	\$ .6 M	\$ 6.8 M
<b>TOTAL</b>	<b>\$5.9 M</b>	<b>--</b>	<b>\$15.1M</b>	<b>\$2.1 M</b>	<b>\$2.7 M</b>	<b>\$25.8M</b>

Table 7.2 - Ho'olehua-Pālā'au Infrastructure Costs





#### 7.4.4 SUPPLEMENTAL AGRICULTURE

Over 5,861 acres have been designated as supplemental agriculture. These lands are comprised of the existing 40 acre parcels that within the MIP have been split into two parcels, one consisting of 35 acres designated as supplemental agriculture. The remaining five acres within these parcels are designated as subsistence agriculture and are further discussed in section 7.4.5. No structures would be allowed to be built on these parcels.

#### 7.4.5 SUBSISTENCE AGRICULTURE

The MIP designates 287 lots on 2,138 acres as Subsistence Agriculture. These lots vary in size from 2-4 acres and are considered large enough for small-scale agriculture and keep beneficiaries eligible for certain types of U.S. Department of Agriculture (USDA) loans. Further, according to HAR, Chapter 4-152-3(f), irrigation water from the MIS is only available for lots at least two acres.

The designated area for the previously awarded lots of the Nā'iwa Agricultural Subdivision has road infrastructure currently in-place. Phase IV development of the Ho'olehua Water System has been funded through a Rural Development Loan & Grant to rehabilitate approximately 1.5 miles of water mains within Farrington Avenue. It is anticipated that upon completion of this phase of work, potable water will be made available to the Nā'iwa subdivision. These awarded parcels average about 5 acres but vary from 4 to 9 acres per lot. The awarded lots are considered a priority in the MIP.

There are three areas designated as "new" subdivision area of Subsistence Agriculture lots. Two areas are located in the central core just north and south of the central Community Use areas. These areas are comprised of 94 two-acre lots on 278 acres.

The remaining 135 five-acre lots on 1,572 acres are situated along the main local collector streets within Ho'olehua and include 19 lots on Pu'u Kapele, 10 lots on Cemetery Road, 38 lots on Farrington Avenue (north), 48 lots on Farrington Avenue (south), and 21 lots on Mo'omomi Avenue. Subsistence Agricultural lots less than 4 acres are not allowed to subdivide. Several alternative lotting schemes were developed and discussed among interested community members which included 'ohana members and the Moloka'i Homestead Farmers Alliance. The preferred option is to split the 5-acre Subsistence Agricultural lot into one 2-acre and 3-acre parcel. A main house and workman's quarters would be allowed on each of the subdivided 2 and 3 acre parcels for a total of 4 per 5 acre area.



*Aerial photo of Ho'olehua agricultural lands, March 2005*



*Eastern view of Ho'olehua agricultural lands, March 2005*







Of the several key issues that arise with this recommendation of subdividing lots, the provision of potable and irrigation water source is the primary concern as the subdivision of lots will encourage a shift in increased population density, thereby creating a greater demand on existing infrastructure.

It is the endeavor of the MIP to retain the agricultural integrity of the central plain within Ho'olehua. As such, these lands were purposefully not designated as residential lots. As Subsistence Agricultural lots that are attached to 35-acres of Supplemental Agricultural lots, it is recommended that guidelines and criteria be established and enforced to complement the existing lifestyle and character of Ho'olehua. Some of these guidelines already exist in the approved Addendum to Agricultural Leases which includes:

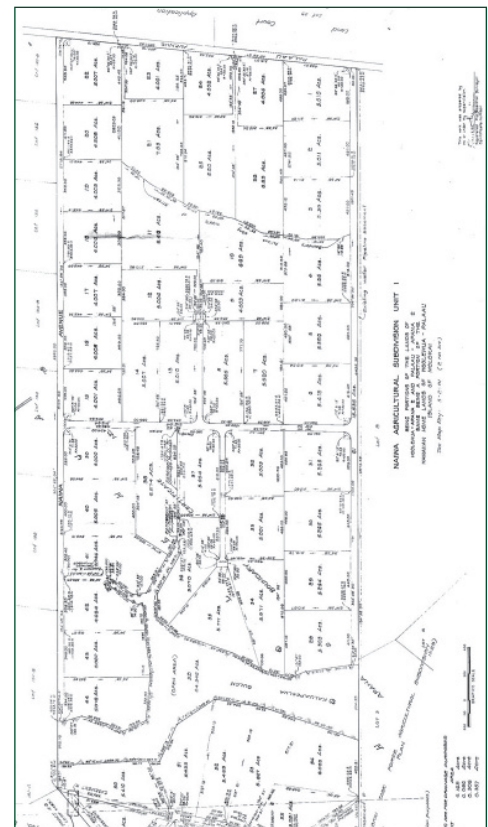
- A requirement for active cultivation of two-thirds of a lot of the portion of lot that is feasible to cultivate. Active cultivation is to occur by one year from execution of the farm lot lease. Non-compliance with the active cultivation requirement, even with justified time extensions, will constitute a default on the lease and re-award to another qualified applicant.
- A farm plan would need to be submitted to and accepted by the Department to implement any plans for building structures on the 5-acre Subsistence Agriculture lot. For lessor loan-funded lessees, any significant changes within the implementation of the farm plan including types of crops or acreages cultivation, which can have an impact on projected production value, will require a submittal of a revised plan to the Department. For independently financed lessees, a revised farm plan is not required but the active cultivation requirement still applies.
- The lessee may be allowed to construct a residence on the lot provided that the lessee has satisfied the active cultivation requirement. Although the addendum states that the lessee may construct a residence anywhere on the lot, additional restrictions would apply for the Ho'olehua Subsistence Agriculture lots. Within the approved lot areas, residence structures will be individually sited based upon proximity from local collector street fronting the lot and a designated buffer zone designed to limit the potential for associated nuisances such as dust or odors for adjacent farm lots.
- It is the policy recommendation of the MIP that lease transactions for the subdivided 5-acre Subsistence Agriculture lots be only available to immediate family members of the existing lessee. In unique circumstances whereupon the existing lessee has no immediate heir, consideration should be given to those highest on the



Model of subdivision scheme for existing 40-acre agricultural parcel



Supplemental and Subsistence Agricultural parcel in Ho'olehua



Parcel scheme for Na'iwa Agricultural lots, Ho'olehua





waiting list. If the existing lessee seeks to sell their lease, verification restrictions will be imposed by the Department to ensure that the lease is transferred to an individual that meets the minimum blood quantum requirements of the Department.

Further, a Rights-of-Agreement should be executed between adjacent lessees of these Supplemental/Subsistence Agricultural lots so that the rights of farmers are protected from nuisance complaints from other residences due to farming operations.

Additionally, measures should be provided to ensure that adequate DHHL staffing is provided to administer and direct existing programs and anticipated future programs to meet the needs of farmers such as cooperative opportunities for equipment, marketing, financing, operations and maintenance.

The subdivided Subsistence and Supplemental lots are a low priority in the MIP. To allow for the build-out of all possible designated lots, new infrastructure, including domestic and irrigation water, would need to be in place prior to development of any subdivided lot. It should be noted that for the MIS, the consumer under HAR Chapter 4-152-17(a) is responsible for furnishing, installing, and keeping in good and safe condition all equipment for receiving, controlling, applying, or using irrigation water from this source. Further, it will be the responsibility of the existing lessee to secure financial resources for the subdivision of these lots; including costs for surveying, land clearing, and installing improvements from the point of existing connection to the residence. It is the recommendation of the MIP that for those lessees with agricultural lots that are not in active cultivation and that exceed any warranted time extensions to submit a farm plan, the Department provide a notice to either discontinue lease, increase lease rent, or require a mandatory return of unutilized land that would be placed into the pool of available lands for those on the waiting list.

Table 7.1 below summarizes the development costs, which would be necessary to support the maximum build-out allowed under the proposed subdivision of subsistence agricultural lots.

#### **7.4.6 PASTORAL**

Over 697 acres of the 923 acres of pastoral land are situated in the northwest section of the Ho'olehua tract. The remaining 224 acres are situated along the northern coastline. Fifteen of the existing 24 lots have been awarded.

#### **7.4.7 COMMUNITY USE**

The majority of 73 acres of land designated as Community Use are located near the central core of Ho'olehua. Approximately

#### **CONDITIONS FOR SUBDIVIDING AGRICULTURAL LOTS IN HO'OLEHUA**

- Active cultivation of two-thirds of the existing lot
- Submittal of a farm plan
- Development of additional homes within designated area
- Lease transactions for subdivided lot available only to immediate family members with consideration given for unique circumstances of no immediate heir
- Execution of rights-of-agreement between adjacent lessees
- Provision of adequate DHHL staffing to provide necessary administrative support





23 acres of these lands consist of existing facilities that include the Lanikeha Community Center, the Ho'olehua Fire Station, the Ho'olehua Cemetery, the Moloka'i High School, several churches and other educational and social service organizations that have revocable licenses to utilize DHHL lands. Future proposed community uses include an expansion of recreation facilities at the Lanikeha Community Center. The purpose of these lands is to complement the existing rural residential community.

An additional 50 acres at Mo'omomi have been designated as Community Use. This area represents part of a community resource conservation/stewardship agreement with the Department of Land and Natural Resources (DLNR) for coastal and marine resources at Mo'omomi. This use is a quintessential representative of the traditional Hawaiian value of *malama aina*. The land is managed by a community group under these principles.

Mo'omomi Reserve preserves the best intact coastal dune system in the State of Hawai'i. It was organized by Moloka'i residents to protect coastal and marine resources from over use by fishermen from other islands and is an excellent example of community empowerment, indigenous stewardship and the preservation of subsistence lifestyles. During the course of community meetings there was a consensus among those beneficiaries and community members present that the coastal resource area be extended all the way to Kalaupapa.

#### 7.4.8 SPECIAL DISTRICT AREAS

There are two designated Special District areas within Ho'olehua. The first is Pu'ukapele Rock Wall Complex, a 372 acre parcel in the northwest section of the tract which is currently leased to the U.S. Air Force until 2013 as a radio receiver site. Community members and historical documents verify that this area has significant cultural sites that warrant future preservation. Prior to the end of terms of the lease, DHHL will need to develop a cultural resource management plan. It is recommended that measures are formulated to ensure that the historical context and integrity of these tangible cultural features are maintained. Determinations as to the historical significance of these features should be defined and evaluated by a working group that is comprised of recognized cultural practitioners from the community and invited academic interests.

The second Special District Area is comprised of 288 acres and is situated along the northeastern tract that lead to the Conservation Area above the Kalaupapa Peninsula. The area includes Pu'u 'Eleuweuwe (1,145 ft). No development is proposed in this area as this area has been designated as a Nature Reserve with a medium density of endangered or threatened plant life.



*Homestead Association Center in Ho'olehua*



*Mo'omomi Beach - Ho'olehua*



*Pastoral lands in Ho'olehua*







#### 7.4.9 COMMERCIAL

Within Ho'olehua, approximately 40 acres have been designated for Commercial use. Existing commercial use areas include the U.S. Post Office and First Hawaiian Homes Credit Union that are located on the southeast corner of Farrington Avenue and Pu'u Pe'elua Avenue. As a focal node, the northeastern corner of the same intersection has been designated as Commercial for other necessary facilities that would need to accommodate the potential needs of a growing community in Ho'olehua.

The development of these areas will largely rely on market trends (particularly those based on agricultural activity), community initiatives, and entrepreneurship. The community has expressed a desire to provide for a development of mixed use of commercial and community support near the Moloka'i Airport. Approximately 14 acres have been designated along the Moloka'i Loop Road for potential commercial development. Depending on marketing potential, it is essential that agriculture activities within DHHL lands are provided the necessary support services to make the economic component of these efforts competitive in markets outside of Moloka'i.

Currently there are other commercial cooperative activities that are in operation in close proximity to the Ho'olehua tract. Specifically, the Hikiola Cooperative, the Maui County Agricultural Park, and the USDA Plant Materials Center are all potential partners for commercial growth within Ho'olehua. Any potential use of this area will require negotiations with the existing lessee.

Along Maunaloa Highway, approximately 5 acres have been designated for Commercial in consideration of a possible venture for a food service and/or community kitchen facility that is visible and accessible to commuters that travel along the primary thoroughfare on the island. Design of any facility and its operation would have to be to a scale that is complementary to the existing rural character of Ho'olehua.

#### 7.4.10 CONSERVATION

The 46-acres of Conservation District along the northeastern section of the Ho'olehua tract are also designated under the State Land Use District Commission.



*DHHL Community Meeting at Lanikeha Community Center*



*Historical habitation site at Pu'ukapele*



*First Hawaiian Homes Credit Union in Ho'olehua*



*Entry tunnel of Moloka'i Irrigation System  
(Photo by State DLNR-CWRM)*





## Section 8.0

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# Development Priorities and Phasing Schemes





## 8.0 DEVELOPMENT PRIORITIES

The MIP provides development priorities and phasing recommendations consistent with the DHHL General Plan. The overall priority of the different land uses is summarized in the table on the right.

*Residential* uses are the development priority of the MIP. The MIP exceeds its allocation of the DHHL General Plan goal for housing of 400 lots over 20 years with an estimated 417 new residential lots. The MIP designates two priority residential areas: in 'Ualapu'e and Kapa'akea, Kamiloloa, and Makakupa'ia areas. However, given the cost constraints, Kalama'ula is a low priority.

*Agricultural* and *Pastoral* lots are lower priorities than Residential. However, the previously awarded Nā'iwa lots in Ho'olehua are a priority of the MIP. These awards are important but they are more costly and serve fewer beneficiaries than Residential. Further, outside of the Nā'iwa lots, most of the remaining lots are part of the proposed subdivision in Ho'olehua, which is a low priority of the Department in terms of provisions for infrastructure and improvements to support increased density in an existing area.

Land can be designated as *General Agriculture* immediately but some areas may not be leased out immediately due to low demand for land for farming and ranching.

*Special District* should be set aside now but the development of these areas will be driven by the Department developing working partnerships with community stakeholders in establishing both natural resource and subsistence management programs and cultural resource management programs. Other Special District areas such as the Flood Control, Wetlands, and Kalaupapa Historical Settlement will also require capacity building of resources and partnerships.

Different types of Community Use areas are distinguished in the plan: include neighborhood and regional uses. Neighborhood uses such as parks and schools should be developed with residential areas. However, regional Community Uses will require community input and initiative and should be implemented when there is community interest including cemeteries and support services for kūpuna housing and health care.

*Conservation* lands are a high priority to reflect the importance of protecting Hawai'i's natural environment.

*Commercial* and *Industrial* should be developed based upon anticipated market demand and upon availability of infrastructure.

### PHASING CRITERIA

LAND USE	PRIORITY
<b>Residential (Homestead)</b>	High, Medium & Low
<b>Agriculture (Homestead)</b>	High Low
<b>Pastoral (Homestead)</b>	Low
<b>General Agriculture</b>	Market Driven
<b>Special District</b>	DHHL, Community & Market Driven
<b>Community Use</b>	High & Community Driven
<b>Conservation</b>	High
<b>Commercial</b>	Market Driven
<b>Industrial</b>	Market Driven

### PRIORITY DEFINITIONS

<b>High</b>	1-6 years
<b>Medium</b>	7-10 years
<b>Low</b>	10 + years
<b>Market Driven</b>	Depends on market
<b>Community Driven</b>	Depends on community initiative





## 8.1 PRIORITY AREAS

One agricultural homestead community in Ho'olehua and two residential communities of 'Ualapu'e and Kapa'akea, Kamiloloa, and Makakupa'ia were identified as priority areas of the MIP. The residential areas are undeveloped lands with provisions of road access and an available supply of potable water. The non-prioritized residential area of Kalama'ula is also on undeveloped land but part of an established residential community.

These priority areas were determined by an assessment of beneficiary preferences, the location of the parcels, the physical conditions of the land, and development costs. In the ranking of this priorities, it was determined that the awarded but unbuilt Nā'iwa Agricultural homestead development would be the first priority for completion.

At full build-out, the 361 residential lots provided in the two areas address 90% of the housing goals of the DHHL General Plan. Although not a priority due to high development costs, the additional provision of residential lots in Kalama'ula would exceed the goals of the General Plan. Further, the addition of homes in the proposed subdivision of agriculture lots in Ho'olehua, which is currently restricted by an inadequate potable water source for a full build-out of subdivided lots, would further add to the housing total and contribute to reducing the waiting list.

The priorities for the residential homesteads include not only the residential units in these areas but also the community use areas that will provide the amenities to make these healthy communities.

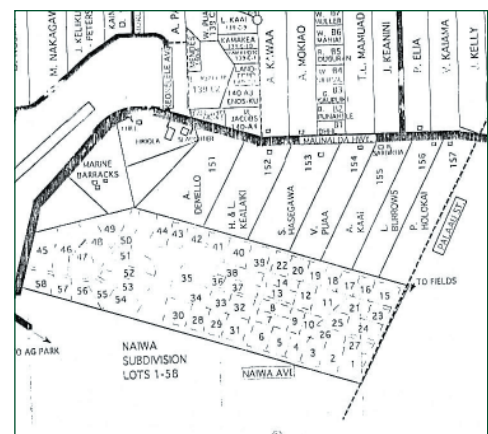
### 8.1.1 PRIORITY 1: NĀ'IWA AGRICULTURE SUBDIVISION

An already planned and awarded but non-built community is the main priority of the MIP. The area is comprised of 58 lots on 298 acres that were part of an accelerated award program in 1986.

Phase III of the Ho'olehua Water System improvements have been completed. Phase IV of the Ho'olehua Water System is current under a bidding process. This phase of work includes construction of approximately 595 lineal feet of 6-inch and 17,385 lineal feet of 8-inch water main along Farrington Highway in Ho'olehua which will then feed into an existing pipeline easement that aligns with Pālā'au Avenue. Upon completion of this water main project and other infrastructure needs including site preparation, roadways, and drainage, the Department will be submit a request for subdivision approval to the County of

### MIP RESIDENTIAL PRIORITY AREAS

	Lots
'Ualapu'e	74
Kapa'kea	286
<b>TOTAL</b>	<b>361</b>



Nā'iwa Agricultural Subdivision area in Ho'olehua







Maui, which will designate Tax Map Key parcel numbers and process building permits for these lots. A preliminary estimate for infrastructure costs is \$8.6 M, or \$157,636 per lot.

### 8.1.2 PRIORITY 2: 'UALAPU'E RESIDENTIAL

The residential community in 'Ualapu'e is the first priority of the MIP. Two major phases of the residential area are recommended (Figure 8.1). This community includes 74 residential homesteads and approximately 3 acres of community use that includes a park and cemetery.

'Ualapu'e was selected as the first priority for several reasons. The area was ranked high by beneficiaries in the survey conducted at the beginning of the planning process. Comments at the community meetings reinforced the interest of the 'Ualapu'e area. The area is nestled along the southeastern shores of Moloka'i island. The scenic views, access to potable water and reasonable infrastructure costs also make it practical to develop an appropriately scaled community in this area.

The west end phase is composed of 47 house lots on 16 acres. Road access will be provide from Kamehameha V Highway and along an existing unimproved road that will be modified to County standards for rural areas as outlined in the Moloka'i Community Plan. This west end area is phased first because it is in closest proximity to existing infrastructure including water storage and pump as well as in close proximity to existing community uses such as Kilohana School and the cemetery. Also with this development, it is anticipated that a cultural resource management plan will be in place for Kalauonākukui Heiau that may include some buffer and physical landscaping elements to protect the site.

The second phase is situated on the east end and includes 27 lots on 9 acres. This phase is considered a medium priority.

Infrastructure costs are summarized in Table 8.1. Both phases require connection to off-site water wells and storage facilities and on-site roads and water. Under the requirements of Hawai'i Administrative Rules 11-2-31.1, the two areas qualify for the use of Individual Wastewater Treatment systems. A drainage and storm water management systems will also be in place. The two phases will require minimal intersection improvements

### 8.1.3 PRIORITY 3: KAPA'AKEA, KAMILOLOA, AND MAKAKUPA'IA RESIDENTIAL

The third priority area of the MIP is Kapa'akea, Kamiloloa, and Makakupa'ia homestead which is currently comprised of 72 lots on 40 acres (Figure 8.2). The area has a rich cultural resources and community area such as One Ali'i Fishpond but is currently in need of a neighborhood residential coastal park.

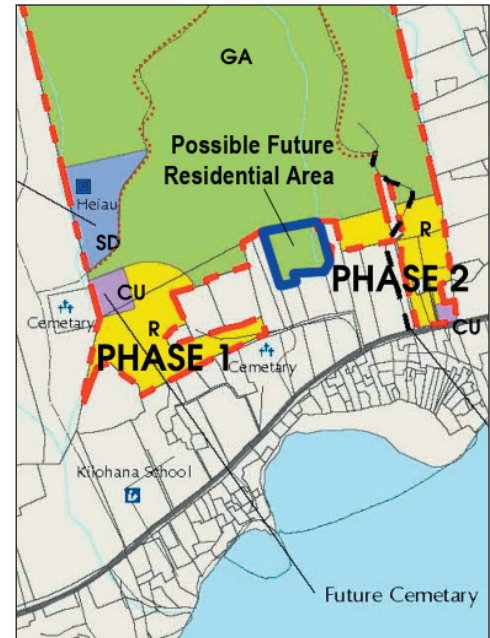


Figure 8.1 - 'Ualapu'e Residential Phasing Scheme

#### 'UALAPU'E PHASING

##### Phase 1 - High

- 47 house lots

##### Phase 2 - Medium

- 27 house lots
- 2.9 acres for Community Use





Tentative plans which will require future negotiations with the existing lessee are to acquire approximately 2 acres adjacent to the existing residential community and provide a coastal park.

Kapa'akea, Kamiloloa, and Makakupa'ia was selected as the second residential priority due to its gently sloping topography, access to available potable water source with sufficient supply, and reasonable infrastructure costs. Also, Kapa'akea, Kamiloloa, and Makakupa'ia is a desirable residential location because of its proximity to Kaunakakai town.

A single phase of development for the middle portion of the tract is proposed. This phase will yield 286 half-acre lots on 204 acres. To support this build out, an onsite wastewater treatment facility will be required.

Infrastructure costs are summarized in Table 10.2. The new wastewater treatment facility is estimated at \$12.5 M which would be constructed on the onset of this phase. Drainage swales and detention basin would also be installed to provide adequate capacity to handle runoff due to incidences of high rainfall.



Figure 8.2 - Kapa'akea - Kamiloloa - Makakupa'ia Residential Area

	POTABLE WATER	WASTE-WATER	SITE PREP & ROADS	DRAINAGE	ELECTRICITY	TOTAL	PER LOT
<b>Major Factors</b>	New Tanks, Wells & Transmission Lines	IWS	Roads & Intersection Improvements	Assume 5' Depth	Transmission Lines		
<b>On-Site</b>	\$0.3 M	--	\$1.4 M	\$0.4 M	\$0.3 M	\$3.3 M	\$63,829
<b>Off-Site</b>	\$0.1 M	--	\$0.5 M				
<b>On-Site</b>	\$0.1 M	--	\$0.5 M	\$0.3 M	\$0.1 M	\$0.7 M	\$37,037
<b>Off-Site</b>	--	--	--				
<b>TOTAL</b>	<b>\$0.5 M</b>	<b>--</b>	<b>\$2.4 M</b>	<b>\$0.7 M</b>	<b>\$0.4 M</b>	<b>\$4.0 M</b>	<b>\$54,054</b>

Table 8.1 - 'Ualapu'e Residential Phases Infrastructure Costs

	POTABLE WATER	WASTE-WATER	SITE PREP & ROADS	DRAINAGE	ELECTRICITY	TOTAL	PER LOT
<b>Major Factors</b>	Connection to Existing Source	Construct New Treatment Facility	Enhance Road Access	Assume 5' Depth and ¼ of the Roadway	Transmission lines		
<b>On-Site</b>	\$3.1 M	\$12.5 M	\$9.6 M	\$01.4 M	\$2.6 M	\$29.2 M	\$102,097
<b>Off-Site</b>	--	--	--	--	--	--	--
<b>TOTAL</b>	<b>\$3.1 M</b>	<b>\$12.5 M</b>	<b>\$9.6 M</b>	<b>\$1.4 M</b>	<b>\$2.6 M</b>	<b>\$29.2 M</b>	<b>\$102,097</b>

Table 8.2 - Kapa'akea-Kamiloloa-Makakupa'ia Residential Phases Infrastructure Costs



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## Section 9.0

### Conclusion







## 9.2 PRIORITY ON BUILDING COMMUNITIES

An emphasis in the MIP is maintaining or enhancing the character of existing communities and remaining focused on the ideal and values of the island plan in creating new communities through the future development and awarding of residential homesteads. The priority areas of future development are the residential homesteads in the 'Ualapu'e and Kapa'akea, Kamiloloa, and Makakupai'a tracts. The MIP proposes a limited allowance for agricultural parcel subdivision in Ho'olehua based upon the conditions set forth in the Hawai'i Administrative Rules §10-3-26(f). The allowance for subdivision in Ho'olehua could be one way to promote homestead families to return to Moloka'i to reinvest efforts in both subsistence-based and supplemental agricultural production while concomitantly decreasing the existing demand for new homesteads as evidenced by the current wait list.

## 9.3 POINTS FOR FUTURE PLANNING STUDIES

Several points emerged during the planning process that should be incorporated by the Department as needs for future planning studies for DHHL lands on Moloka'i, including:

- The completion of a parcel-by-parcel analysis and evaluation of agricultural lands in Ho'olehua to assess the true potential of agricultural development and constraints.
- The formation of a working group to discuss long-range feasibility, planning and development of a community cultural center in Pālā'au (Apana 3).
- The development of an integrated natural resource management and subsistence access plan and partnership with existing entities such as the East Moloka'i Watershed Partnership for the areas of 'Ualapu'e, Kapa'akea, Kamiloloa, Makakupai'a, and Ho'olehua.
- The creation of a mākua ("parent") advisory council comprised of representatives of the Kalaupapa Patient's Advisory Council, the National Park Service, the State Department of Health, family interests with ties to Kalaupapa, and the Department to discuss the long-term legacy of this wahi pana.
- The existing community interests need to be involved in the creation and implementation of design guidelines for proposed new developments to ensure that the vision and legacy of an area are maintained and sustained in the continuation of vibrant communities.
- The Development Plans for each of the areas need to address the unique natural, socioeconomic, and cultural features within each parcel that provide for subsistence needs and entrepreneurial activities; and
- There must be a balance between the development of proposed residential areas and the community services and amenities that are important for creating livable communities rather than classical housing subdivisions that lack character and a sense of place.

	POTENTIAL NEW LOTS	TYPE OF LOT	ESTIMATED WATER DEMAND (mgd)	ESTIMATED AVAILABLE WATER SUPPLY (mgd)	(+/-) SUPPLY TO DEMAND	ON-SITE COSTS (\$ millions)	OFF-SITE COSTS (\$ millions)	TOTAL INFRASTRUCTURE COSTS (\$ millions)	COST PER LOT
'UALAPU'E	74	Residential	0.049	0.200	0.151	\$3.3	\$0.8	\$4.1	\$55,405
KAPA'AKEA, MAKAKUPAI'A, KAMILOLOA	286	Residential	0.174	0.930	0.756	\$29.2	\$0.0	\$29.2	\$102,098
KALAMA'ULA, PĀLĀ'AU	57	Residential	0.323	1.200	0.877	\$7.3	\$4.2	\$11.5	\$201,754
KALAUPAPA, PĀLĀ'AU	0	n/a	0.029	n/a	n/a	\$5.8	\$0.0	\$5.8	n/a
HO'OLEHUA	544	Agricultural	1.530	1.200	(0.330)	\$19.0	\$6.8	\$25.8	\$47,353
	961					\$64.6	\$11.8	\$76.4	

Table 9.2 - Summary of Lot Development & Infrastructure Costs





## 9.0 CONCLUSION

The MIP is a guidance document for managing approximately 25,899 acres of DHHL land on the island of Moloka'i over the next 20 years. The plan designates appropriate land uses which ensure DHHL land will be developed to its highest potential to meet the needs of native Hawaiian beneficiaries while protecting, maintaining, and developing appropriate levels of activities that utilize and interact with the natural and cultural resources that are unique to each area. The proposed homestead land uses and acreages are summarized in *Table 9.1*. The estimated potable water demand compared to area supply and the associated infrastructure costs for new lot development in each of the DHHL tracts is provided in *Table 9.2*.

### 9.1 ISLAND PLAN GOALS AND OBJECTIVES

The MIP fulfills the policy requirements of the DHHL General Plan as it identifies the following:

- Land Designations for all 25,899 acres of DHHL land on Moloka'i;
- Priority areas for new Residential homestead development;
- Appropriate areas for Community Use and Special District;
- Areas for existing and potential growth for Agriculture and Pastoral uses; and
- Limited but adequate areas for income-generating Commercial uses.

The plan was prepared using a comprehensive planning process that incorporated substantial beneficiary and community participation from the initial identification and evaluation of assets to the determination of preferred land uses for each DHHL tract.

Land Use Designation	'UALAPU'E (Acres)	KAPA'AKEA, MAKAKUPAI'A, KAMILOLOA (Acres)	KALAMA'ULA, PĀLĀ'AU (Acres)	KALAUPAPA, PĀLĀ'AU (Acres)	HO'OLEHUA (Acres)	TOTAL (Acres)
Residential	25	264	398	0	55	742
Subsistence Agriculture	0	0	213	0	2,138	2,350
Supplemental Agriculture	0	0	0	0	5,862	5,862
Pastoral	0	465	539	0	923	1,927
General Agriculture	299	2,165	2,353	0	3,681	8,498
Special District	85	2,247	1,719	847	660	5,558
Community Use	3	61	83	14	73	234
Conservation	0	0	0	609	46	655
Commercial	0	0	13	4	40	58
Industrial	0	16	0	0	0	16
TOTALS	412	5,218	5,318	1,474	13,478	25,899

Table 9.1 - Acreage Summary by Land Designation Under the MIP



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## Section 10.0

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## GIS DATA

**DATA SOURCE:** Hawai'i Statewide GIS Program, Office of Planning <http://www.state.hi.us/dbedt/gis/download.htm>

GIS LAYER NAME	SOURCE	DATE
Agricultural Lands of Importance to the State of Hawai'i (ALISH)	State Department of Agriculture 1:24,000 hand drafted blueline maps. Prepared with the assistance of the Soil Conservation Service, U.S. Department of Agriculture, and the College of Tropical Agriculture, University of Hawai'i.	1977

**Continued- DATA SOURCE:** Hawai'i Statewide GIS Program, Office of Planning <http://www.state.hi.us/dbedt/gis/download.htm>

Coastline	USGS Digital Line Graphs	1983
Elevation Ranges	USGS Digital Elevation Models	2000
Flood Data	Federal Emergency Management Agency (FEMA); Scanned and compiled by FEMA from 1:24,000 Digital Flood Insurance Rate Maps (DFIRMs).	1996
Hawai'i Public Schools	USGS Geographic Names Information System (GNIS) DAGS Planning C&C of Honolulu	1992, 2000 & 2001
Hydrography Lines	USGS Digital Line Graphs	1983
Hydrography Polygons	USGS Digital Line Graphs	1983
LANDSAT images	Pacific Disaster Center	--
Land Study Bureau (LSB) Detailed Land Classification	Land Study Bureau's Detailed Land Classification Aerial Photos were hand drafted onto paper overlays of the U.S.G.S., 1:24,000 topographic and orthophoto quads. Ratings were developed for both over-all productivity, and for specific crops. This layer represents only the over-all productivity ratings.	1967
Major Roads	USGS Digital Line Graphs	1983
Minor Roads	USGS Digital Line Graphs	1983
National Wetlands Inventory Polygons	U.S. Department of the Interior, Fish and Wildlife Service	1978
Parks	GDSI parcel data	1998
Perennial Stream Arcs	USGS Digital Line Graphs, & CWRM Hawai'i Stream Assessment database	1983 & 1993







GIS LAYER NAME	SOURCE	DATE
Rainfall	Giambelluca, T.W., Nullet, M.A., and Schroeder, T.A. 1986. Hawai'i Rainfall Atlas, Report R76, Hawai'i Division of Water and Land Development, Department of Land and Natural Resources, Honolulu. vi + 267	1990
Special Management Areas	County Planning Department blue-line maps; compiled and drafted on USGS quadrangle base	1998
State Land Use Districts, 2000	State Land Use Commission 1:24,000 Mylar Maps	2000
Threatened and Endangered Plants	Division of Forestry and Wildlife	1992
200 Ft. Contours	USGS Digital Elevation Models	2000







